Smithsonian

December 1990

Coconut Harry Truman, a beaming example of gifts to Presidents (p. 82)

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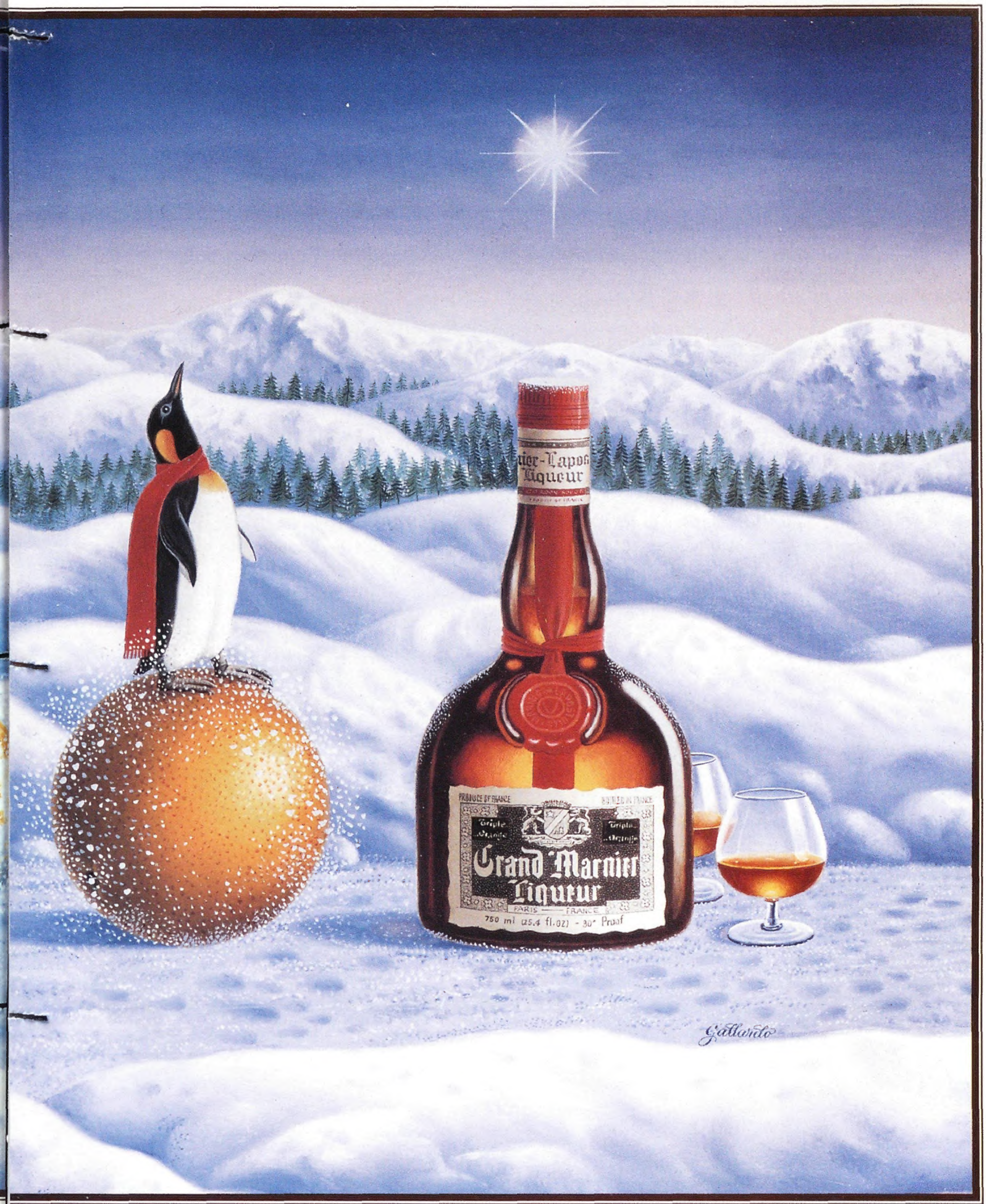

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December 1990

Smithsonian

Volume 21, Number 9

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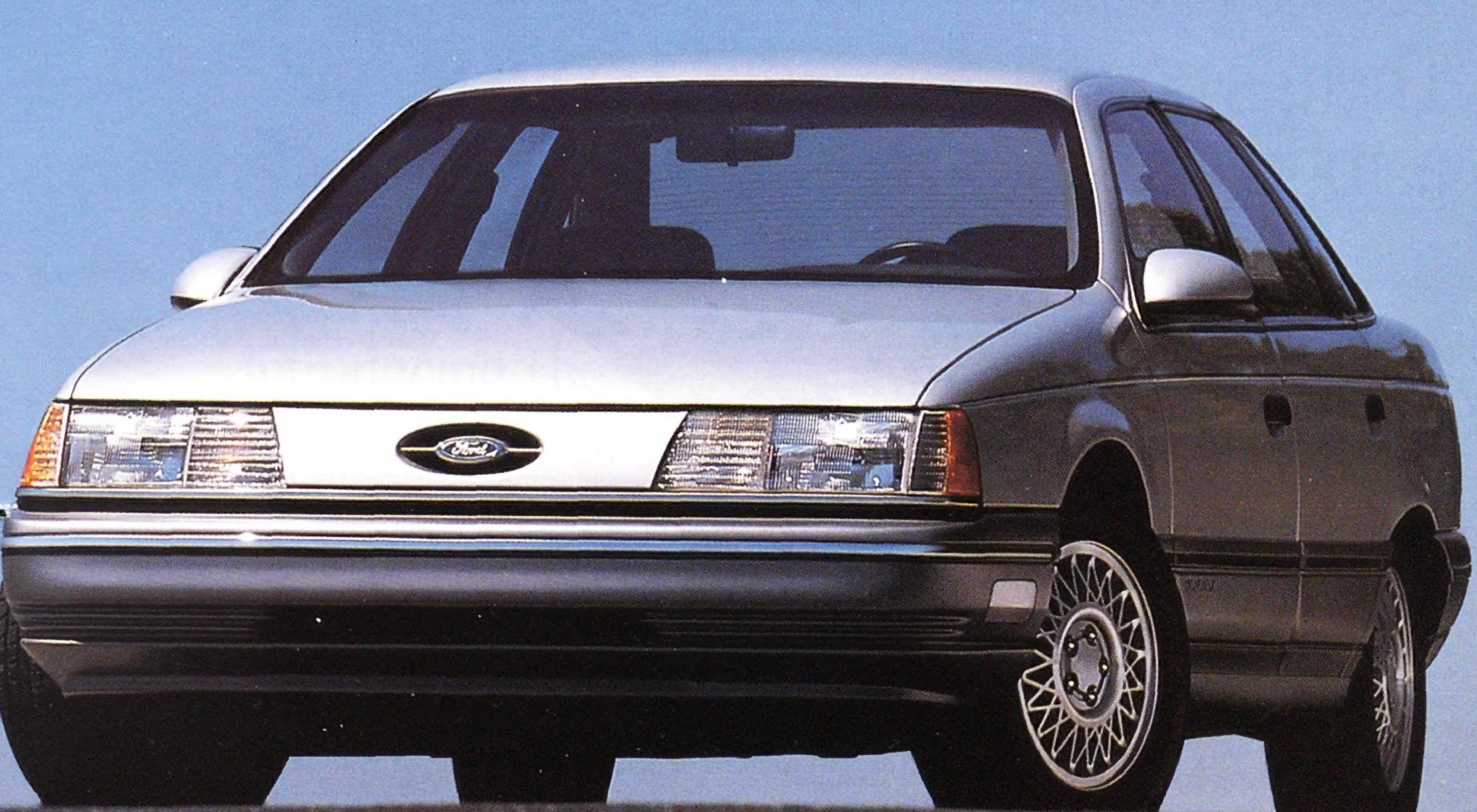

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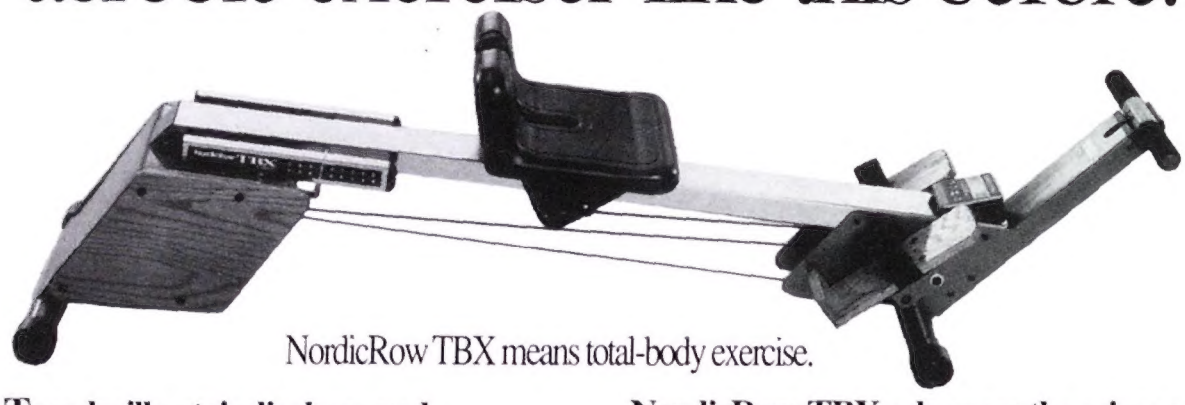

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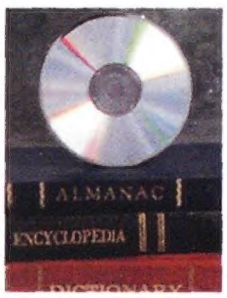

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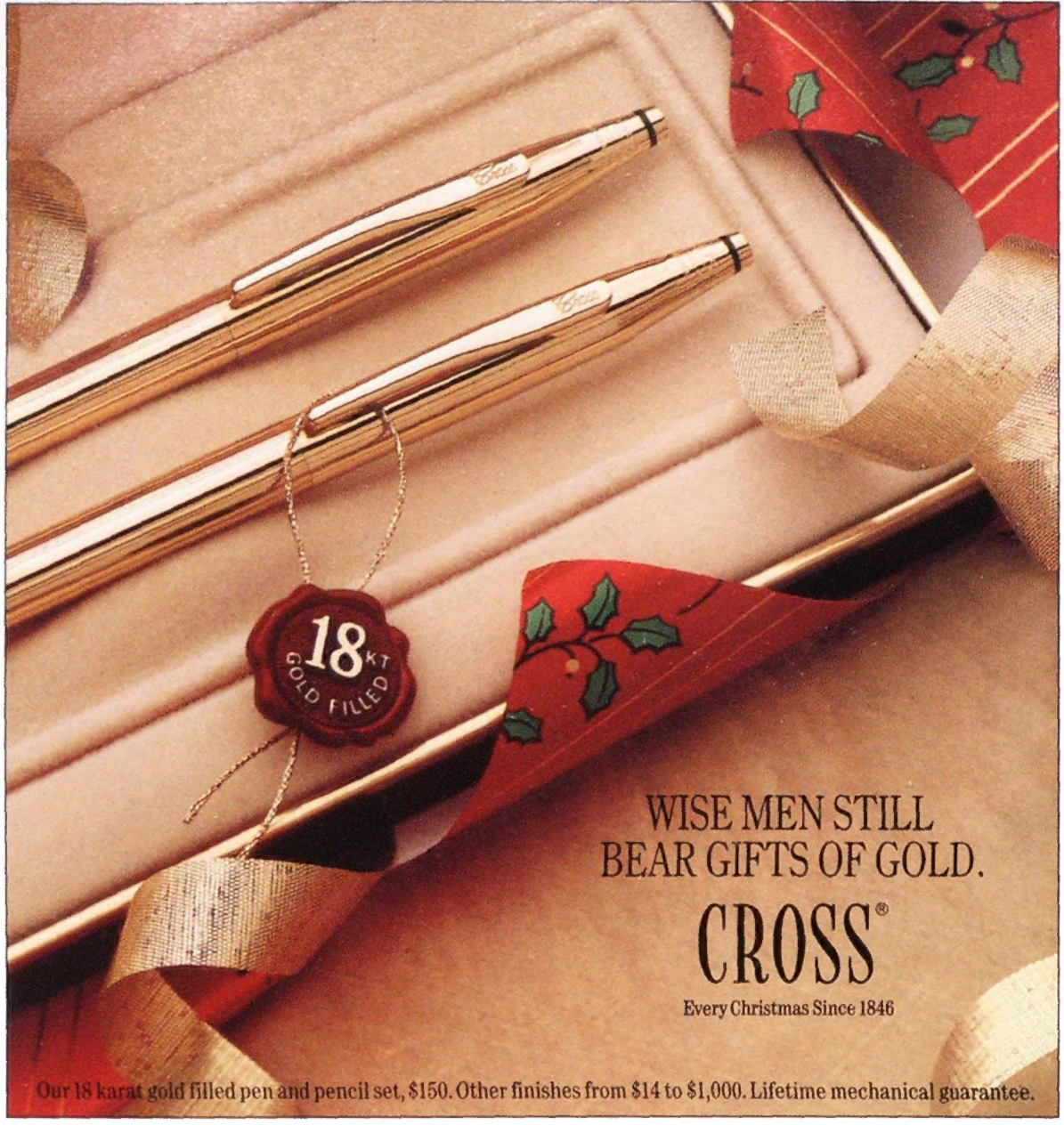
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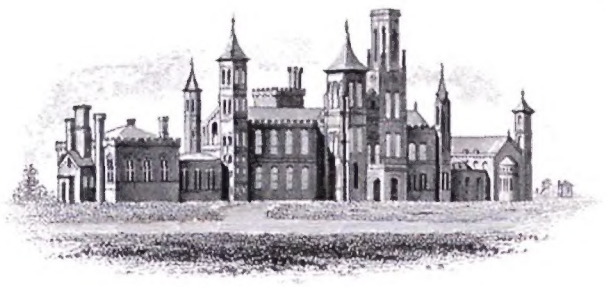
Secretary Adams' comments

Smithsonian horizons



Many years of archaeological work in Iraq have made me sympathetic to its people, if not its government

At intervals over the quarter-century or so following 1950, I spent many years in Iraq, mostly locating ruined towns and cities along the changing skeins of ancient watercourses that once sustained them. Nothing ever came to seem more natural than Iraq's contradictions—its flawed but often breathtakingly original thrusts toward modernism; the proverbial hospitality of its people side by side with their sad and stoic tolerance for official violence; a passionate eagerness for education-based advancement, too often institutionally and politically suffocated; pockets of creative, critical discourse quietly flourishing amid the gaping, self-inflicted wounds of successive civic upheavals; loyalty to kin and place surviving even the endless, dispiriting diaspora of its professionals and intellectuals; and a fierce national distinctiveness that has been oddly maintained within a modest territory bounded on all sides by unnatural, contentious frontiers.

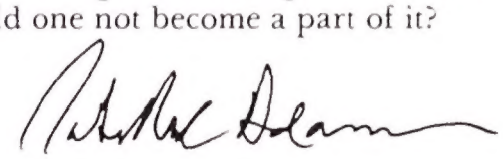
Yet the society growing out of these many-stranded tensions and loyalties has long exhibited, for all its periodically misdirected energy and brutality, striking qualities of resilience, creativity and endurance. To what extent might antecedents of the same complex qualities and relationships help to explain the conundrum that always brought me back to it—the explosion of diverse cultural possibilities that made ancient Mesopotamia the world's first heartland of literate, urban civilization more than five millennia ago? To be sure, the last epigones of that great stream of recorded tradition disappeared from view some three millennia later. It is a *dead* civilization, Assyriologist A. Leo Oppenheim once forcibly argued, drawing a curtain between it and its successors. But I am less ready to do so. We and those countrymen still draw something common and vital from its radiance.

Official approval for my specialized kind of fieldwork gradually gave way to vague but multiplying obstacles and then to its prohibition, perhaps growing out of a general suspicion of a dependence on aerial photographs. Under those circumstances one can simply acknowledge an overriding allegiance to the world republic of science and turn away to other regions and problems. Or, no less reasonably, one can accept the constraints on access or method that one's hosts have a right to impose, and thus be able to continue working at some level on great historical problems. This latter course also permits the strengthening rather than rupturing of ties with local scholars and their students, who may one day largely supersede us. For better or worse I made the former choice, perhaps irreversibly, upon coming to Washington in 1984. But old concerns and friendships remain strong.

August is not a clement season for archaeological fieldwork in southern Iraq, so that fortunately no foreign colleagues were trapped there at the time of the invasion of Kuwait. Instruments, vehicles and supplies—and, more seriously, excavation records—are another matter. Many months, perhaps years, of uncertainty may pass before they can be recovered or definitively written off as lost. The same applies to slowly unfolding research undertakings, and perhaps even to scholarly careers. But when pressed by indulgent questioners about the likely damage to archaeological sites and treasures in the event of war, I find myself replying not as a researcher and with barely repressed emotion: Dead cities can withstand almost any punishment, but think about what a modern war would do to the inhabitants of living ones.

Recent months have brought increasingly troubled reflections. Neither a conspiratorial origin nor a readiness to use every available instrument of repression is new to Iraq's governments. What accounts for the strength and predatory behavior of the present one? If facile explanations will do, perhaps it is the new, worldwide availability of weapons of mass destruction, or the newly devised organs for mobilizing internal control, if not support. But recalling those persistent internal tensions and contradictions, I cannot help thinking that they, too, must have been wound differently or more tightly in the years since I knew the country well. However complex the explanation of Iraq's militancy, the outcome, now spiraling out of control toward mounting brutality and tragedy, is surely at variance with the aspirations of most of Iraq's people, not to speak of the luminous cultural achievements of their past. Yet, to be honest, the situation is not so out of place against the background of the region's immensely long and violent politico-military history.

Even in its present isolation as virtually an international pariah, Iraq can never be for me an enemy country. Mine were not office- and hotel-based sojourns but long forays across barren steppelands, dunes, marshes, flooded fields. Those journeys were dependent always, in numberless ways, on countrymen who unhesitatingly came to my assistance. Some of Iraq's own noted scholars repeatedly gave guidance and shelter to my studies at some personal risk. Owing and sharing so much, how could one not become a part of it?



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Letters to the Editor

Black Union soldiers

Dear Sir: The cover of the musical sheet on page 49 of your October issue depicts members of the 8th U.S. Colored Troops, a Pennsylvania unit that served in the Battle of Olustee, Florida, on February 20, 1864.

That battle, about 50 miles west of Jacksonville, was Florida's only major battle. It involved 10,000 men, with 3,000 casualties in a four-hour period—one of the worst casualty rates of the war for total number of troops involved. One-third of the Union troops and casualties were members of the 8th U.S., 54th Massachusetts and 1st North Carolina black regiments. The 8th suffered 310 casualties, including the death of its colonel, Charles W. Fribley.

Lewis G. Schmidt
Allentown, Pennsylvania

Dear Sir: Your article answers many questions my husband and I had upon reading the following passage from a letter written April 20, 1864, by young Laura Washabaugh of Bedford, Pennsylvania, to her fiancé, Dr. George Carpenter Douglas, Assistant Surgeon, 1st New York Cavalry (they became the grandparents of my husband):

"Papa and I have had several word battles already. We are both Unionists as you know, but we are not exactly alike in our abolition views, he seeing the wisdom of using the Negroes in diverse ways as a war measure (how I dislike that phrase!), while I believe in using them as men, brave and willing to defend a country ungrateful enough to entertain prejudice and to make them fight hatred in the South and prejudice in the North. Have they not vindicated themselves before those who trample upon their race and deny their manhood? I cannot too greatly honor a black soldier—truly, for them the hardships are doubled. They go into every battle with the knowledge that death is less dreadful than captivity, but, my dear, I will stop here. Time will perhaps do what I will not attempt.

"What have you thought of the monstrous proceedings of the Rebels at Fort Pillow? My feelings are intense upon the subject."

Laura's father was Maj. Daniel Washabaugh, Assistant Adjutant General and Chief of Ordnance of Pennsylvania, serving under Governor Curtin.

Barbara Hixon
Kirkwood, Missouri

Homing pigeons

Dear Sir: As you mentioned, carrier pigeons were a vital means of battlefield communication in World War I. One intrepid bird is memorialized by a plaque [detail, below] at the ruins of Fort Vaux, east of Verdun. During the German offensive in 1916, forts guarding that strategic supply center were targeted by the Kaiser's forces, which planned to take Verdun, then press on to Paris.

On June 1 the German bombardment of Vaux began, followed by an assault with flamethrowers, gas and grenades. On June 4, Major Raynal, commander of the fort, sent his last carrier pigeon to the rear with a message that described the suffering and danger his men were enduring, declaring "Relief is imperative." The pigeon delivered the message and then, having been poisoned by smoke and gas, died at the dovecote.

The gallant "Pigeon of Verdun" was later awarded the French Legion of Honor and in 1929 immortalized along with the *colombophiles* (pigeon fanciers) who had also died for France.

John R. Mauff
Chicago

Black brings out the brilliance of the holidays.

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Dear Sir: Paul Julius Reuter, the founder of Reuters, had a pigeon news-gathering service. His pigeons were the first to bring to London news of Napoleon's defeat at Waterloo, which sent share prices skyrocketing. My wife's grand-uncle Werner Von Siemens, who in the mid-19th century made improvements to the first telegraph, warned Reuter his business was doomed unless he switched to this new source of news gathering.
John W. Brabner-Smith
Washington, D.C.

Dear Sir: Mr. Bodio missed the postal service between the Channel Islands of Guernsey and Herm. Herm had even issued a pigeon postage stamp on a small envelope that had a brass ring set into one corner. The envelope was fastened to a pigeon's leg by means of a wire run through the loop, for its flight between the islands.

I have a couple of envelopes, dating from the 1920s. I also had the good fortune to visit both islands and view the pigeon lofts.
Floyd Alan Siegfried
Virginia Beach, Virginia

Dear Sir: There is an annual "pigeon shoot" in the town of Hegins, Pennsylvania, where, on Labor Day, thousands of pigeons are released, then shot with rifles by whoever wishes to participate—men, women or children. In fact, it is said the children scamper around after the shoot, breaking the necks of any birds found shot but still alive.

Perhaps the people of Hegins could come to respect the birds if they knew of their heroic deeds as messengers.
Rita Chesterton
Stockton, New Jersey

Dear Sir: Your article brought to mind my time as a justice of the peace in the tiny village of North Prairie, Wisconsin, back in the early '50s. Our constable had arrested a speeder at 5 A.M. His plea to the court: he was a pigeon racer, had just released his flock about 40 miles west, and was speeding to get to Milwaukee to clock them in. A contrite and apologetic fellow, he got off without a fine. It seems he had a pair of very fast birds that beat him home almost every time.
E. F. Lindsley
Delafield, Wisconsin

The Pennsylvania Turnpike

Dear Sir: The real story of the Pennsylvania Turnpike is its tunnels. Without them, there would be no turnpike. The "tunnel-stiffs" worked eight-hour shifts around the clock, six and seven days a week for 9 to 12 months. They drilled, blasted, mucked out the debris, and watched for landslides of rock or dirt while the roof was being shored up with reinforcing steel or timber. As the drillers began drilling the next round, they prayed that the explosions had been correctly counted by the previous shift. They did not want sparks from the drill steel or the rock to ignite unexploded dynamite that might still be in an unseen hole.

These men did hard, backbreaking, dirty work and they loved it. They were a special breed: with nerves of steel and backs like young oak trees—hard-working, hard-cussing, tobacco-chewing, often hard-drinking men who faced danger every working hour and laughed at it. I should know—my husband was a "tunnel-stiff" who drove the hole clear through Sideling Hill.

So, motorists, when you ride swiftly and safely through those tunnels, tip your hat and give a big Texas "Howdy" and a "Well done, you old tunnel-stiffs, wherever you are."
Evelyn Kappler
San Antonio

Dear Sir: Author Patton captured the excitement that came with the opening of the Pennsylvania Turnpike. As to the 35 mph wartime speed limit, the clever authorities enforced it by measuring the legal elapsed time between toll gates and fining the speeders. Equally clever drivers responded by speeding to a rest stop and then killing time, to arrive "legally" at the next toll gate.
Donald P. Curtis
Darlington, South Carolina

Fauves

Dear Sir: Among the visual delights of Helen Dudar's article is Henri Matisse's brilliant canvas *View of Collioure*, showing three mountains leading down to the sea.

Thirteen summers ago my wife and I had the good fortune of being in Collioure in the company of another French artist, Willy Mucha, who had had a studio there for many years. Mucha spoke of his camaraderie with Matisse, and how the latter had told him of visualizing a dancing female nude on each of the same trio of mountaintops as viewed from Collioure. Mucha even took a felt-tip pen and sketched the scene as Matisse had described it.

I have long wondered whether these visionary nudes were the inspiration for Matisse's undraped female figures in his paintings *Luxury, Calm and Delight*, *Joy of Life* and/or *The Dance*.
Bennard B. Perlman
Baltimore

Lincoln Ellsworth

Dear Sir: I was a small boy when Lincoln Ellsworth was planning or had gone on his many explorations. His safety was a major concern for all our family. My father was vice president of Cambridge Collieries, owned by Lincoln's father, James W. Ellsworth. Around 1928 Father became financial manager of Lincoln Ellsworth's estate—which included the Villa Palmieri in Italy and Lenzberg Castle in Switzerland.

I remember how terribly impressed I was when one night at dinner Father announced, "Today I bought an airplane." It was the Northrup Gamma ski plane Lincoln flew in his exploration of the Antarctic—the *Polar Star*. It cost $80,000, quite a sum in those days. I well remember our worry and the prayers we said for his safe return after he disappeared for 30 days.

The whole country owes Lincoln Ellsworth much recognition for his role in the United States' presence in Antarctica. What a shame that this real hero—equal to Lindbergh and Byrd—got such little recognition and credit for his great contributions.
Charles E. Butler
Winter Springs, Florida

Dear Sir: Lincoln Ellsworth was most appreciative of the skill and perseverance of his pilot, my brother Herbert Hollick-Kenyon, on that last successful flight of Antarctic exploration. In addition to naming several terrain features

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for members of his family, he named a plateau and a peninsula for him.

A letter from Richard Byrd to Herbert contained the ultimate accolade: ". . . your flight was one of the greatest in all of the history of aviation."

My brother's last flight in the *Polar Star* was from New York to Washington, D.C. when he delivered it to the Smithsonian Institution.

David H. Kenyon
Sherman Oaks, California

Dear Sir: You quoted Lincoln Ellsworth as saying that the ideal epitaph, "a gallant gentleman," was on the tomb of Robert Falcon Scott. In fact, Captain Scott has no tomb. He was buried in the snow of the Antarctic he gave his life to explore. The phrase "a gallant gentleman" was used as a final tribute to Captain L.E.G. Oates, one of Scott's companions. The leader of the search party of 1912, Dr. Edward L. Atkinson, left a snow cairn in the approximate place where Oates was last seen, and into it placed a cylinder with this record: "Hereabouts died a very gallant gentleman, Captain L.E.G. Oates of the Inniskilling Dragoons. In March 1912, returning from the Pole, he walked willingly to his death in a blizzard, to try and save his comrades. . . ."

Dan Peed
Silver Spring, Maryland

Violin maker

Dear Sir: I would like to register my disappointment with Barbara Jepson's article about my violin research. We are in the process of defining the tone of the violin as the main commodity, in contrast to the present system of relying on labels and visual beauty as the primary basis of evaluation. Our claim to have reproduced the sound quality of an average Stradivarius relies chiefly on sound-spectrum analysis and not subjective persuasion.

Among the jury corralled by SMITHSONIAN I would like to have seen represented at least one of the many distinguished scientists who have evaluated and supported this work, including a past president of the American Chemical Society, who has done so in detail. Let me emphasize that the results of chemical analysis are solid scientific facts; they do not go away because somebody does not like them.

Finally, allow me to mention one other fact: I have four children, not three. My wife, Mary Ann, and I have a 5-year-old daughter, Katie, who is my main inspiration and future champion of our violins.

Dr. Joseph Nagyvary
Texas A&M University
College Station, Texas

Around the Mall and beyond

Dear Sir: The statement that the cheetah is "a different breed of cat, with a genus all to itself: *Acinonyx*," may leave the erroneous impression that it is the only member of the cat family classified in a separate genus. The family *Felidae* is made up of four genera: *Acinonyx*; *Neofelis*, also with only one species, the clouded leopard; *Panthera*, including the lion, tiger, jaguar, leopard and snow leopard; and *Felis*, with all other felines, including the domestic cat.

It is also worth noting that among the reasons why the cheetah *is* "a different breed of cat" is a unique physiological characteristic: the adult cheetah is the only feline without retractile claws.

Richard Sanborn
Bayside, California

Dear Sir: How satisfying that you have introduced Laurie Marker-Kraus to so many people. This remarkable woman, who is fighting a nonstop life-and-death battle to save this beautiful but critically endangered species, was here to judge a pygmy goat contest, and stopped by to meet a group of us who had spearheaded an effort to raise funds to help save the cheetah. We had also adopted the cheetah as our Rosendale Elementary School mascot for Earth Week.

Elizabeth Brunski
Niskayuna, New York

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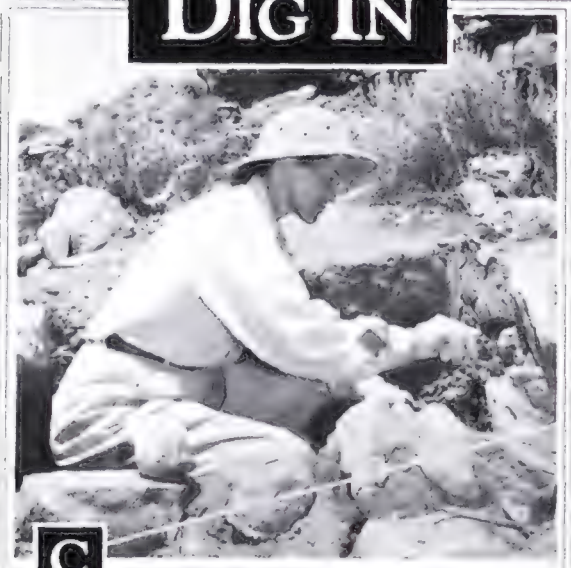

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Around the Mall and beyond

If you've ever had a sudden urge (quickly smothered, of course) to give one of the wind-activated sculptures outside the Hirshhorn a shove, don't be ashamed. Wanting to experience a wonderful object with more than your eyes and ears—to sniff at it, perhaps to lick it, certainly to touch it, possibly to try it—simply means all your senses are clicking along smoothly.

I've always wanted to take a short hop in the Wright Flyer—maybe about 120 feet, out on the Mall—and my wife wants to slip on the Hope Diamond for an evening. But except for the day the people in charge of the First Ladies' Inauguration gowns permitted Mamie Eisenhower to wear her pink slippers just one more time because they were so comfy and matched her new pink dress, Smithsonian national treasures remain sacrosanct.

Yet to placate those of us who are sensuously healthy, the Institution now has a few hands-on exhibits. Hearing about them, I arrived panting at an activity room inside the Museum of American History's "After the Revolution" exhibition and meekly took my place among fellow touchers and triers waiting for a chance to put together a reproduction of an 18th-century wooden pail called a piggin.

We were given several wooden staves. One, longer than the others, is the bail stave—the handle. These fit inside three wooden hoops of different sizes. The staves are cut so that, when properly aligned, a groove is formed to hold the round wooden bottom of the pail securely in place.

My turn came. "Just fit those wooden pieces inside the smallest hoop and keep them together," said the docent. "Then, see those wooden hoops? You move the middle-sized one up first. Here, go ahead," he said, glancing at me. "You won't have any trouble."

Determined not to disillusion him, I went to work. I got five staves in place, then reached for the sixth—and there was the sound of a stack of kindling collapsing. With great patience I tried again and got to seven staves before the kindling spilled.

A 10-year-old was watching restlessly, and I decided that I was merely being selfish by monopolizing the activity. I'd learned that 18th-century piggin makers, called coopers, were devilishly clever; a skilled cooper would have completed a piggin in about two minutes. My noggin rattling with piggin lore, I turned toward a neighboring activity that uses reproductions of 18th-century clothing and donned a waistcoat.

This was designed to complement the brave postures of gentility. You can't wear it without keeping your head up, your spine straight, your shoulders back, and your stomach in. Clad thus, you walk with dignity, and you sit on the front edge of your Chippendale chair, leaning forward.

I was interrupted while "making a leg" before a mirror to be told that one of the carts was on this floor and that I must see it. At this museum, a "cart" is a mobile display pushed through the galleries to a specified spot, where it draws a small audience to learn from whatever it's demonstrating. I watched and listened to a windup phonograph and a gramophone, discovering that Edison's Amberola, which plays a cylinder, sounds about the same as the disk-playing Victrola, though its needle vibrates up and down instead of sideways.

But it was the cotton-gin cart that captured me, maybe because *The Civil War* had just aired on public TV. For some reason I was compelled to visit that gin again and learn more, so I called on Heather Smith of the museum's Department of Public Programs, who had put this demonstration together. "It's very popular," she said. "Almost everyone's heard of a cotton gin and wants to operate one."

Her demonstration gin was built in Athens, Texas, by the Dennis Manufacturing Company under a 1912 patent. It's a model, about the size of a small microwave oven, light enough to be trundled in a cart. A handcrank turns eight small rotary saws, about an inch

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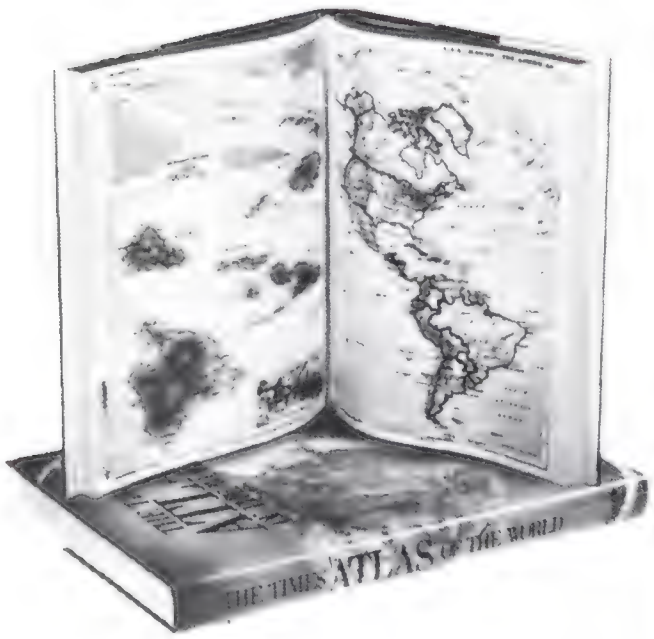

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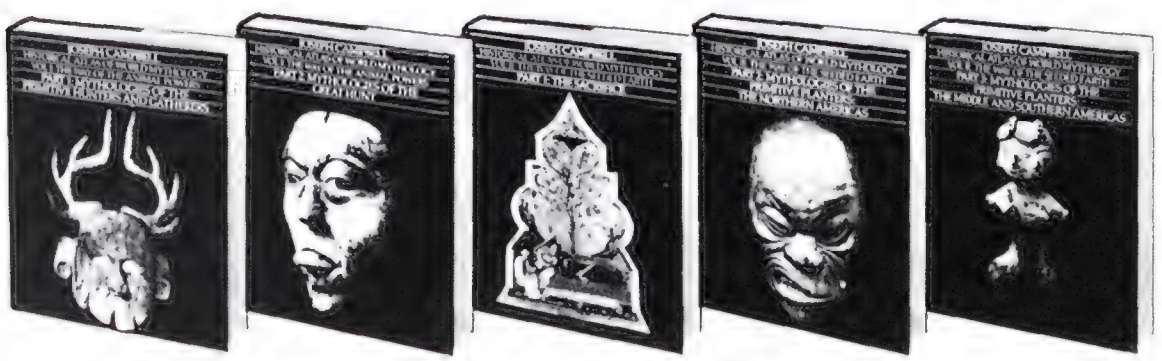

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Both: Hirshhorn Museum and Sculpture Garden

Jackson Pollock's *Number 3, 1949: Tiger* (left), *Number 2, 1951*, are juxtaposed in exhibit at Hirshhorn that encourages viewers to compare effectiveness of two similar works done by the same artist.

apart, that catch the raw cotton and push it against a roller geared to turn in the opposite direction. On the other side of the roller a rotating brush sweeps the cotton lint away to a holding cage, a "condenser."

"Try it," said Heather. She gave me a handful of raw cotton that came from the Textile Division. Dirty, and nubbly with seeds, it was the kind of short-staple cotton that flourished throughout the South. I turned the crank. The gears whined, the saws sliced into the mess, shoving it forward against the spinning roller. After a minute about 20 seeds popped out, totally free of lint, and the condenser was filled with a haze of clean cotton that flew off the whirling brush.

Then Heather gave me a small clump of raw cotton, and I timed myself as I picked seeds out of it by hand: one minute for six seeds—and they were still festooned with cotton lint that I couldn't pluck away.

On an actual plantation, animals generally powered the cotton gins. A mule might walk a circular tread that was linked to saws, roller and brush by a belt. The size of a gin varied according to the owner's needs. The condenser might be an entire room and was often so filled with floating fibers that, Heather pointed out, the stuff got into workers' eyes, noses and lungs. But in those days, few gave that a thought. Cotton was booming—from 63,000 bales in 1793 to 200,000 in 1796.

Although there is some question about the origin of the cotton gin, most historians credit Eli Whitney, who received the first patent in 1794. Like most people, I've known about Whitney's invention since schooldays. Thanks to the Smithsonian, I finally feel I know at least as much about how it works as I do about gramophones, waistcoats and piggins. What else, I wondered as I left the Museum of American History, would I like to pursue?

That's a perpetual question, and the answers come in a blur, from Archaeology to Zoology. Halfway through my list is Modern Art. Serendipitously, the Hirshhorn is, this very month, displaying various artworks from its collection, inviting visitors to judge each artist's style, method and effectiveness. It's a self-guided tour of modern art, and if it can straighten out the minds of such klutzy viewers as myself, it's a great show.

"Comparisons: An Exercise in Looking" includes two works from each of 15 artists. The wall text and a brochure accompanying the exercise ask the viewers questions about their response to the works and to the artists.

Convinced that participation is the best teacher, I eagerly volunteered as a trial balloon for Judith Zilczer, who put the display together. But doubts assailed me when I was confronted with two formidable abstractions by the great Jackson Pollock (left).

Number 2, 1951 is a collage of gluey paper, pebbles and oddments like wire mesh and twine. *Number 3, 1949: Tiger* is one of Pollock's famous drippings. The write-up that Judith gave me says he dripped "oil, enamel, metallic enamel, string and cigarette fragment on canvas mounted on fiberboard." It doesn't say whether or not the bit of cigarette butt was just an accident.

Thoroughly intimidated, I tried to answer the questions. Was I responding more to one work than to the other? Did I like them both or prefer one? To answer, I had to study them both with real care. Yes, I responded more to one than to the other (I shan't tell you which) and definitely preferred it.

Did I find common traits in the works, or were they so different I wouldn't have thought Pollock did them both? I had to study less this time, but found my interest growing. Yes, there certainly were common traits, but one work was more like what I had thought a Pollock should be. Did I think other people would agree with me, and was such agreement important?

By now I was thoroughly absorbed in these Pollocks and found opinions crowding into my head. Yes, I thought one was better; no, I doubted if anyone would agree; and no, it certainly didn't matter. Judith looked at me approvingly. I felt proud. I had been forced *to look* at a couple of bewildering abstractions and discover the truth that Joshua C. Taylor, former director of the Museum of American Art, lays right on the line in the title of his 1975 book *To See Is To Think: Looking at American Art.* I had seen and therefore thought.

Along with those Pollocks are works of other artists, some of whom are household names, some not (at least in my household). All the works belong to the museum's permanent collection. The earliest are two Mary Cassatt pastels, one dating from circa 1894, the other from 1900. The latest are two acrylics on canvas, both done by Alma Thomas in 1976.

"Comparisons" opens on the 11th of this month and runs until April 21. That makes four months in which you, if you're like me, can begin to get a handle on this difficult, stubbornly personal art form.

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Phenomena, comment and notes

The world has lost a premier dreamer at a time when we need all the ideas we can get to muddle through

Dreaming has a bad name in our society; we Americans like to think of ourselves as "practical." We profess to admire action, an odd bias in a country populated mainly by people whose ancestors immigrated here because they had a dream. They acted on their dreams, to be sure, but the dreams had to have come first.

For decades we have been told that solar energy, whether for heating and hot water or for the generation of electricity, is not practical. So we dismiss the idea. More recently, in the nation's leading newspapers, the Ethyl Corporation has taken out full-page ads featuring a picture of people on bicycles riding through what appears to be a Chinese city. A headline in large type implies that the bike is not a practical solution to the auto-exhaust problem in America. Most of us seem to believe that bicycles are not practical: here at the magazine's Washington offices, only 4 employees out of 52 pedal to work.

Yet there seem always to be a few people around who have not gotten the word; who insist on dreaming of what could be; who don't understand why doing things another, better way is just not practical.

The Worldwatch Institute here in Washington publishes scholarly, heavily footnoted studies on what is going wrong in agriculture, energy, transportation, health care, and so on, and what we can do to reverse the decline. It also publishes an annual, book-length *State of the World* report that documents the lengthening odds on our becoming better managers. Lester R. Brown, the director, writes books with titles like *Building a Sustainable Society*. Deep down the whole Worldwatch gang are dreamers. They eschew purple prose, but they have the vision. Consider one of their latest reports, issued last October as *Worldwatch Paper 98*. Written by Marcia D. Lowe, it is titled "Alternatives to the Automobile: Transport for Livable Cities." After considering all the possibilities, she offers her vision of a civilized future:

"The very heart of a city would be reserved for people on foot and passengers arriving by metro or trolley. Proceeding outward from the center, streets would become the shared domain of pedestrians, cyclists, trolleys and buses. Slow automobile traffic would be allowed beyond the city's densest core, but convenient bus and rail services—running between stops placed within walking or cycling distance of most points—would offer a faster mode of travel. Express public transport routes would link outlying areas to each other and to the downtown. Car parking would be progressively less restricted as one moved away from the city center.

"People would make most short trips by foot or bicycle, and longer urban trips by walking or biking to transport stops, then continuing by bus, metro or trolley. Many long drives and short airplane flights between cities would be replaced by train trips. Automobiles' main function would be to make trips for which these other modes are inconvenient, such as transporting loads of things or groups of people, traveling at odd hours when public transport is running infrequently, and certain recreational uses."

Lowe is no stranger to this sort of dreaming. A year earlier she produced "The Bicycle: Vehicle for a Small Planet" (*Worldwatch Paper 90*), on the possibilities of pedal power, a subject of such potential that it deserves more than the space available here.

My own dreams used to be untethered flights of fantasy and have only recently moved far enough toward reality to be dismissed as merely impractical. Once I imagined cities patrolled by police who did not look for criminals (there were none) but for people in trouble; nations that maintained rapid-deployment strike teams complete with the biggest and best helicopters and transports, not for

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wars (there were none) but for natural disasters like the Armenian earthquake.

I could even picture a nation of totally considerate drivers in which all cars would have flashing lights on top. A person in a hurry, whether to the hospital or only to her child's piano recital, could turn on the lights and other drivers would cheerfully make way.

Now the fantasies of childhood are fading, but advancing years give one the ability to see the condition of our home planet not as a snapshot but as a few minutes of what could turn out to be a very depressing film. Tidbits in the newspapers, unconnected in themselves, provide the dots that define the descending curves of habitability. Last summer, for example, the *New York Times* pointed out that our definition of "good visibility" has had to change. Now, in the Eastern United States, 15 miles is considered average. Not so long ago (and today in the rural West), it turns out, that figure was 90 miles or more.

As I've started to understand how much the planet's health has worsened just during my lifetime, a new dream has been taking shape. It is about an ordinary citizen who unknowingly saves the world. A single decision by this person turns out to be the turning point when the needle on the gauge that represents Earth's health stops moving farther into the red zone and begins to move back toward the green. It's a negative kind of dream, about things that don't happen. This person decides one day, on an impulse, to ride a bicycle to work rather than drive. He is nervous and self-conscious starting out, but after a series of minor mistakes and mishaps, arrives safely at work feeling secretly proud and free, not to mention, as my youngest would say, "pumped." Because he did not drive, an ozone molecule never formed from his exhaust gases to trigger a lethal chain of events in the lungs of an elderly man living on the other side of the city. Unburned hydrocarbon molecules never rained down on the sea hundreds of miles away to work their way up the food chain until they compromised the immune responses of a bottle-nosed porpoise. Our intrepid commuter also unknowingly moved the needle on his body's own gauge, turning away from a path that years later would have delivered him into the hands of the bypass surgeons.

The fantasy of armies of physically fit commuters pedaling the quiet streets of smog-free cities does seem farfetched. But present trends, as many a commuter can testify, point toward nightmares of ultimate gridlock. Lowe points out that any gains we make in fuel economy or even "smart cars" (equipped with computers to find the least-congested routes) will be lost as the number of miles driven climbs ever upward. It is like building more highways to relieve traffic congestion: all too often, traffic on a new road exceeds future projections the day it opens. To really get anywhere will require a more fundamental change in our thinking. Lowe's dream of a downtown planned for people rather than automobiles seems a good place to start.

For at least 20 years my favorite dreamer has been a shy man living in a small town in eastern Pennsylvania, far from the conventional centers of power. He did mean to change the world and devoted his life to showing how it could be done, in the fields of an experimental farm and in the pages of the maga-

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zines and books he published. His name was Robert Rodale, and I've felt a sense of personal loss ever since he was killed last September in a bus-automobile collision in Moscow.

The dream had actually begun with his father, J. I. Rodale (SMITHSONIAN, May 1971), who in turn had gone through an almost religious conversion upon reading Sir Albert Howard's *An Agricultural Testament*, an account of sustainable farming practices developed in India, especially composting. Rodale senior began a magazine called *Organic Gardening* in 1942, followed by *Prevention*, a health magazine devoted to the philosophy of its title, in 1950.

Bob took over on the death of his father in 1971 and expanded what was already a sizable business. He added fitness magazines—*Runner's World, Bicycling, Backpacker*. He brought his readers into the agricultural research, having them experiment with backyard fishponds or growing the neglected but highly promising grain known as amaranth. His Soil and Health Association, modeled loosely after Great Britain's Soil Association, evolved into today's Rodale Institute, which takes findings from its research center in Maxatawny, Pennsylvania, to farmers in China, Guatemala and Senegal, as well as here in the United States.

Rodale's basic dream was simple: to produce crops with optimal yield while maintaining, or actually improving, the quality and productivity of the soil. Today fields of his dreams grow in Pennsylvania: perennial wheatgrass, for example, or corn planted along with hairy vetch, which provides natural fertilizer and controls weeds as well.

A decade ago he began the Cornucopia Project, a scheme to make states more self-sufficient in their food supply (*Phenomena*, September 1981). It did not make sense to Rodale that Pennsylvania consumers, for example, ate broccoli shipped all the way from California in the summer when they could just as well grow their own and enjoy fresher food at lower cost. Project staffers analyzed how much food each state "imported" (and how much money it "exported") and tried to develop marketing systems for local produce.

That effort evolved into the Regeneration Project, which concerns itself with everything from restoring worn-out farms to the development of light, local industry in economically depressed areas, particularly in decaying and even abandoned sections of Rust Belt cities.

Bob Rodale's September trip to Moscow typifies the way he worked. The deal involved Rodale Press; Vneshtorgizdat, the publishing house of the Soviet Ministry of Foreign Trade; and the 50th Anniversary of the October Revolution State Farm, a 2,500-acre enterprise in Kudinova, about 40 miles east of Moscow. The long-term joint venture was to begin with a Russian version of the Rodale magazine *New Farm*, devoted to organic (what the Russians call "hygienic") farming techniques. "This focus is motivated not only by environmental concerns, but also by economic realities. The Soviets cannot afford the expensive chemical inputs used in conventional American farming. Sustainable farming methods will enable them to farm productively and affordably," Rodale said.

The deal includes an agricultural research center at Kudinova modeled on

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Robert Rodale, publisher and farm visionary, digs in on a visit to China.

the Rodale center in Pennsylvania. But the innovative part has Rodale Press providing $250,000 for machinery to manufacture sausage, salami and other processed meats from Kudinova hogs, for sale to airlines, Moscow shops catering to foreigners, and foreign firms in the USSR. Hard currency proceeds will make it possible to buy paper and print the magazine.

(Rodale, who bicycled to work from his modest house in Lower Macungie Township and stood in the cafeteria line at his $240-million-a-year enterprise, was free with his money in other ways. Last year he stepped in with a $250,000 loan to rescue a failing bookstore in New York's East Village.)

When the news about Rodale's death in Moscow reached the Rodale Press offices, one employee went into Bob's office and lit a fire in his woodstove, symbolizing a light that would never go out. The real light is a dream, a dream that is moving forward in backyard gardens and commercial farms, on bicycle paths and running tracks, in regenerated city blocks. It is alive in Lester Brown's institute, in David Morris' ideas for self-reliant cities and Kirkpatrick Sale's bioregionalism movement, in Wes Jackson's Land Institute in Salina, Kansas; in the writings of Wendell Berry (especially *The Unsettling of America*).

The last time I saw Bob Rodale was at a Renew America meeting here in Washington. I made a note (for the umpteenth time) to go up to Pennsylvania and talk to him about his dreams, to be written up for a future article. It is too late now for the interview, but it will never be too late for the dreams.

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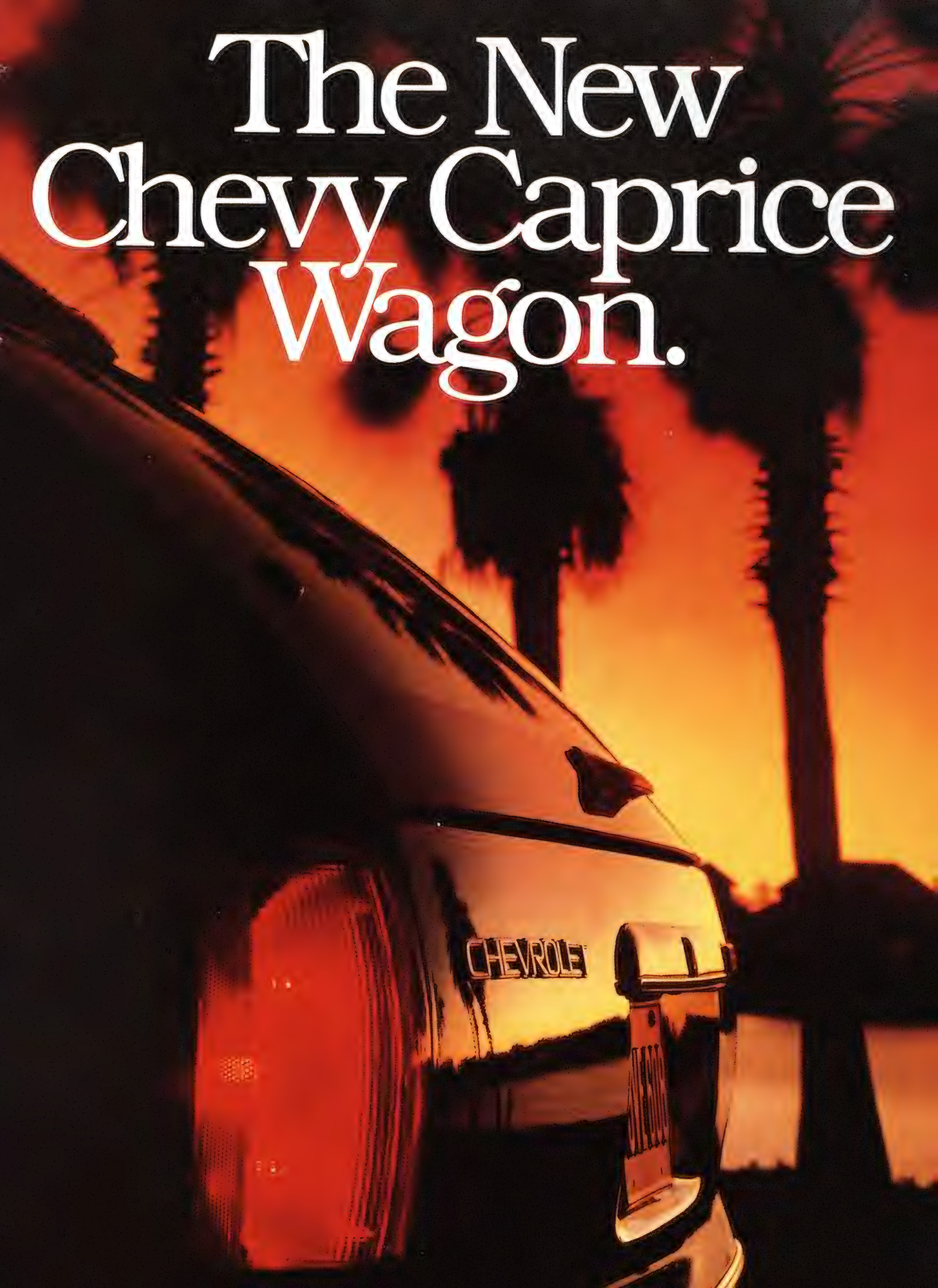

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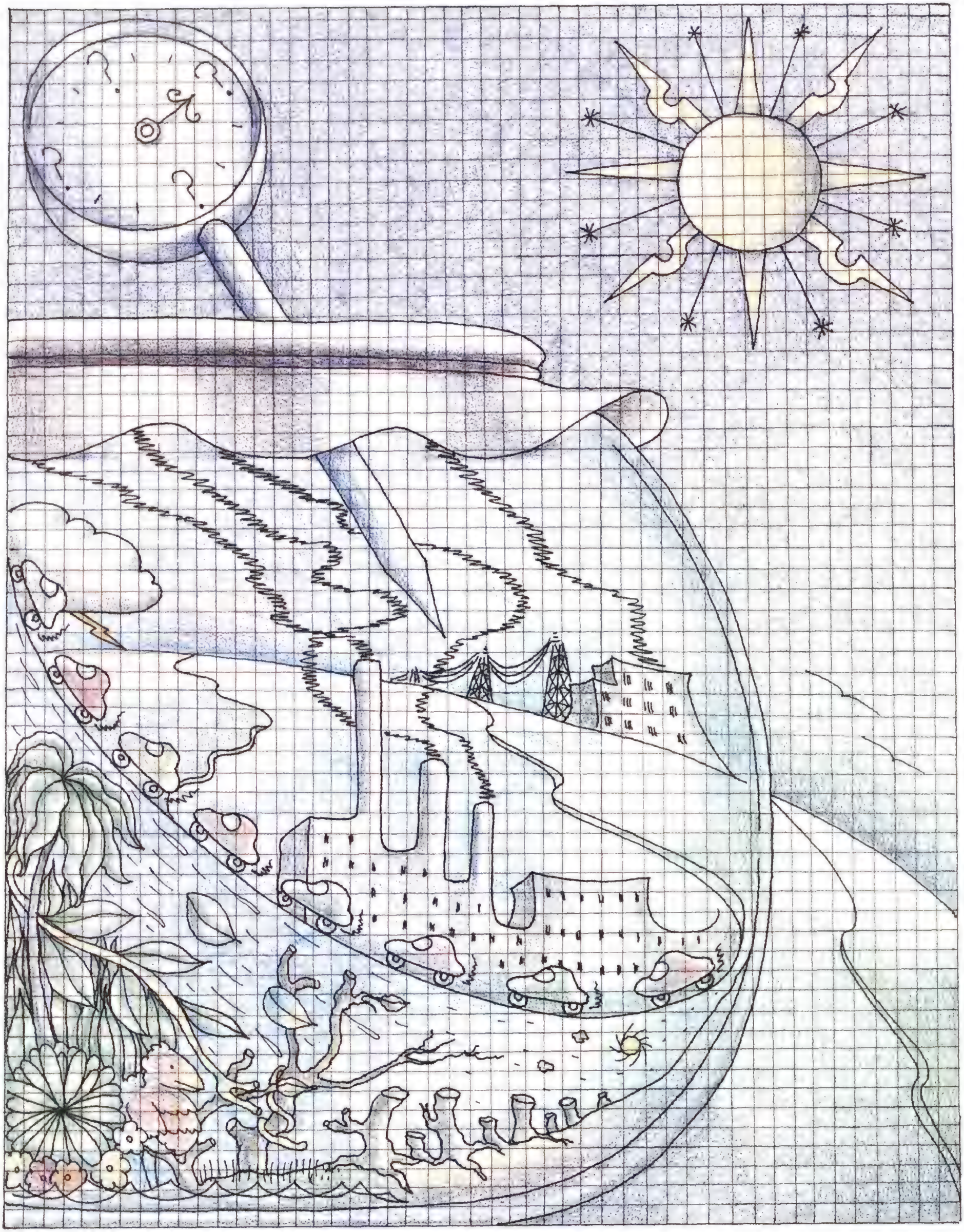


By James Trefil

Modeling Earth's future climate requires both science and guesswork

Predictions of global warming, catastrophic or otherwise, depend on both what we do know and our assumptions about what we don't

I have seen a piece of the 21st century and I don't like it very much. We are going to face serious problems, and we will have to face them while the scientific evidence for the seriousness (and even the existence) of the problems is clouded by doubt and controversy. Worse, the aspects of scientific knowledge presented to the public will appear contradictory and ambiguous, and will give us little on which to make our decisions.

Take the greenhouse effect as one example. Every day, it seems, we read more about it and the dangers of global warming. Even in the sober pages of *Scientific American* we are told that "seldom has there been such a strong consensus among scientists" than in the predictions of global warming. The magazine provided maps showing a greenhouse world in which southern Florida is underwater, and waves lap at the very steps of the Capitol building in Washington.

The *New York Times*, however, runs a front-page article about skeptics challenging dire greenhouse predictions, while *Barron's* weighs in with an article headed: "Climate of Fear: The Greenhouse Effect May Be Mostly Hot Air."

Or take nuclear winter. In 1983 we were told that one effect of a nuclear exchange between the superpowers would be a global cloud of smoke from resultant fires—a cloud that would produce worldwide subfreezing temperatures and kill almost all plants, and whose "potential effects extend to the extermination of *Homo sapiens*." But scientists soon started speaking of a "nuclear autumn," in which a nuclear war in fall or winter produces no climate changes at all, and one in summer produces relatively mild changes in temperature.

These cases, and many like them, are examples of a phenomenon that is becoming all too common in our lives. From courtrooms to our daily newspapers, we are confronted with situations where experts disagree, where the people who are supposed to know the answers can't seem to get their act together. And yet we, as citizens, have to form opinions about things like nuclear winter and the greenhouse effect, and our representatives in government have to enact laws to deal with them. How are the rest of us supposed to make up our minds when the experts can't?

When scientists try to come to an understanding of nature, they often use a tool called the mathematical model, and the controversies we see in the headlines arise from the clash between models used by different groups. To understand many of today's free-for-alls among scientists, you have to understand what mathematical models can do—and what they can't.

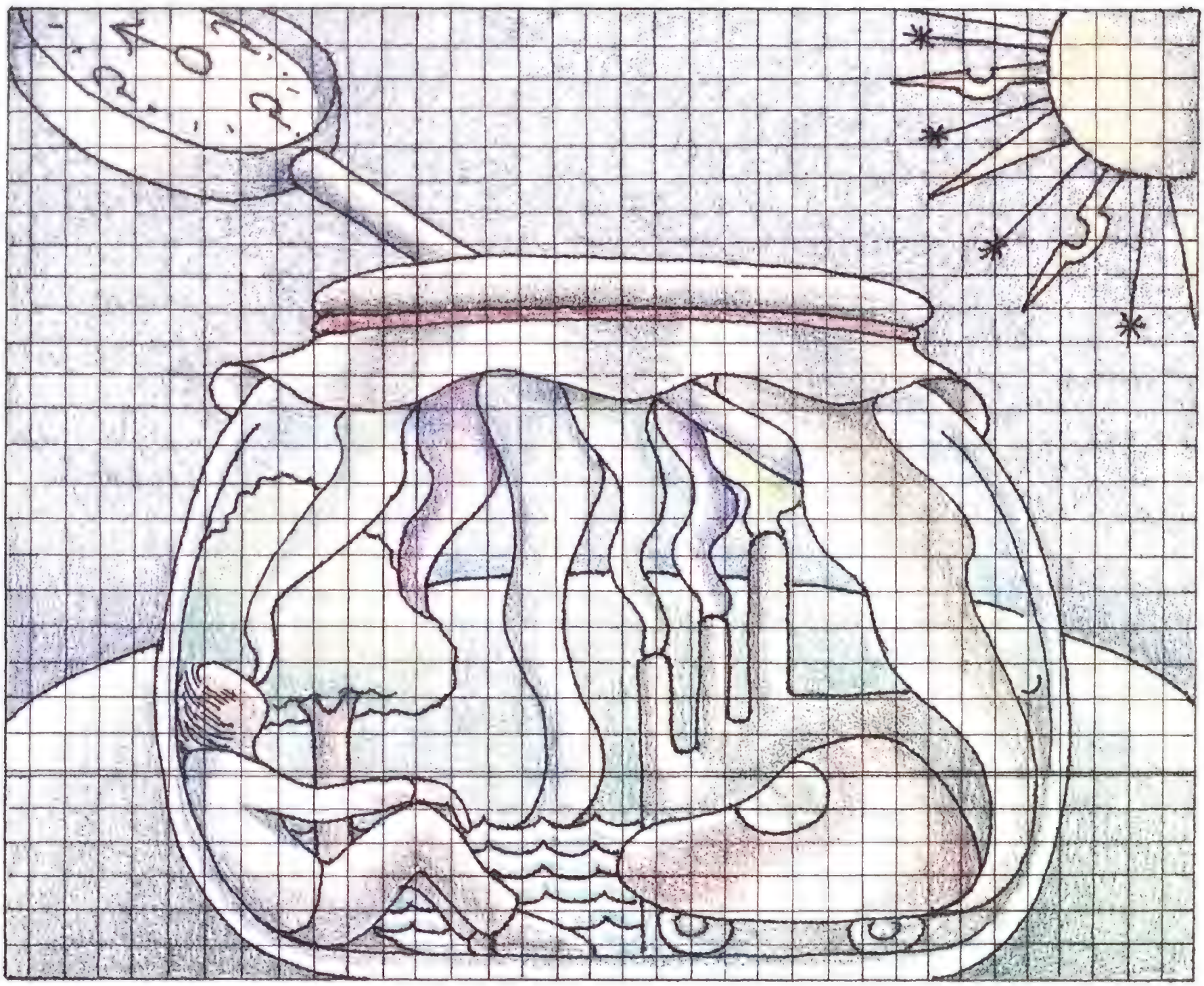
In everyday usage, the term "model" refers to a simple representation of something real. When you buy your child a model car, for example, you expect to get something that has the general shape of a car but that isn't exactly like a real car. The model won't have a motor, and may not have a trunk and doors that open. None of these failings surprise you, because you only expect the model to be an imitation of a car.

In the same way, when scientists confront a complex and difficult problem, they try to find a simple way to think about it. They put together what they call a model to represent the real world. Engineers routinely build model airplanes and test them in wind tunnels in the expectation that the models are enough like real planes to give us useful information.

But what does it mean to build a "model" for something like the greenhouse effect? We can get a grip on

Earth as a terrarium: How do many factors, including human activity, interact to determine future climate?

Illustrations by Margaret Scott



Greenhouse gases, including five million tons of carbon we pump into the air each year, are building up in the atmosphere—but scientists are not in agreement about their effects on the planet's future.

this question by thinking about a simpler problem. Suppose you are a city planner and you have to predict the future development of your town. One important piece of information would be the town's future population. You could just guess at it, of course, but you'd be much happier if you could find a rationale for your guess. Maybe you'd look up the population growth in the past few years and project it into the future. If you did this, you would be making a model of population growth, and this would be one piece of your larger model about the town's future.

There are many ways you could talk about this particular model for population growth. You could just say what you're thinking in plain English: "The population of our town will grow by 5 percent a year." You could put it into the form of an equation: annual population change = 0.05 x existing population. Alternatively, you could state the model in terms of a series of commands to a computer:

1) take the population at the beginning of the year;
2) take 5 percent of it;
3) add the resulting number to the original population;
4) the result is the population at the end of the year.

All of these are just alternate ways of formulating your model for population growth. Whether you talk about the model in English, in mathematics or in computerese, *it's the same model.* Translating a bad model into a set of computer commands doesn't miraculously make it good. A model that doesn't make

sense in plain English won't make sense in computerese, either—predictions do not gain credibility just because they come out of a machine. Thus the hacker's old saying: "Garbage in, garbage out."

The key point is that making a model involves making assumptions about how the world works—in this case, you assume that population growth in the future will be the same as it has been in the past. This assumption could be wrong for many reasons: people could decide to have more, or fewer, children in the future; new industry might move in; the town could grow or shrink for other reasons.

You could improve the simple model by trying to take into account some of these factors. The more things you try to include, the more assumptions you will have to make, and the more complex your model will become. The problem is that as these assumptions multiply, they start to get buried in a morass of technical jargon and become invisible to the general public. This is why your study will generate headlines that scream "COMPUTER STUDY SAYS MILLIONS NEEDED FOR NEW SCHOOLS," without a mention of the fact that it was your assumptions that produced this particular prediction.

Given that any model complicated enough to give a reasonable picture of the real world is going to contain dozens of assumptions, how can you tell whether you're supposed to believe the predictions of the model or not? You can make such a judgment only by doing what modelers call "validation"—testing the model against the real world in some way. For a model that is supposed to predict future populations, for example, you might make a test by giving it population data for 1950 and seeing if it correctly predicts population levels in 1990. Only by testing a model against the real world (which it is supposed to represent) can you build up some confidence that it is a good description of that world and that its predictions are to be taken seriously.

To predict what will happen to the climate, scientists have to construct a model of the atmosphere just the way you construct a model of a town's population. The most prominent of these "atmosphere" models go under the name "General Circulation Models" (GCMs). A typical GCM may contain 100,000 instructions to a computer. Despite its complexity, however, a GCM is exactly analogous to the set of four instructions that I listed for the simple population model. And as was the case for that simple model, the main features of the GCM can also be described in plain English.

At the heart of every GCM is a set of six equations that describe the behavior of the gases in the atmosphere. Once we get past this knowledge, however, we get into questions where our grasp on reality is less firm. Scientists view Earth as a complex machine, one where the various parts mesh to produce the whole. The ocean plays a big role in determining climate. So does the atmosphere. This means that to predict climate we have to build what I will call a "minimodel" for each of Earth's systems, make sure that it works properly, and then hook it into the larger model of the climate. And each minimodel, like any other model, will have its own built-in assumptions.

Trying to take everything into account

A Department of Energy publication on the greenhouse effect includes a table, comprising four pages of fine print, listing the ways different versions of the GCM deal with various important phenomena. In addition to the ocean, there are listings for sea ice (which changes the way heat is exchanged between ocean and atmosphere), soil moisture (which affects how water moves from the ground to the air and back again), surface emission of radiation (which depends on soil type, vegetation and season), clouds, and a host of other factors, each of which has to be represented by its own model. Insofar as possible, each of these smaller models is tested against observation before it is incorporated into the GCM, but you can see that keeping track of all the uncertainties is a formidable task. In practice, each major research center has its own version of the GCM, a version which differs from those of other centers in the assumptions underlying each of its minimodels.

Once we have assembled all of our minimodels, we can proceed with the business of making calculations. First, we divide the atmosphere into square columns, extending upward from Earth's surface. Then we convert the properties of the air in each column (typically at nine different altitudes) into numbers that are fed into the computer. The computer solves the equations for each column, calculates how much air flows out and in, how the temperature and pressure change, and so on. It then balances the books for all the columns in the atmosphere, giving us a prediction of what the climate will be at the end of the time interval under scrutiny. To move forward from that point, the whole process is repeated.

If we could divide the atmosphere into very small pieces—say, the size of a thimble—we wouldn't have any problems. Unfortunately, there are a lot of thimblefuls of air in the atmosphere, and keeping track of all of them is well beyond the capability of even the largest computers. In fact, if scientists want to fit their model into the biggest number-crunchers available today, they have to lump the air into columns about 300 miles on a side.

A physicist at George Mason University, James Trefil is coauthor of Science Matters: Achieving Scientific Literacy, *to be published in January by Doubleday.*

What this means is that in the model of Earth that exists inside the computers, it either rains in a 300-mile square or it doesn't rain at all. This can cause problems—for example, clouds are normally only a few miles or tens of miles on a side, so if clouds are important to climate (and we'll see later that they are), the GCM is going to have a hard time taking account of them properly.

You might think it would make sense to break the atmosphere down into smaller pieces and let the machines run longer. It just won't work. If we reduced the atmospheric sections from 300 to 30 miles on a side, the best supercomputers would require 40 years to come up with a prediction of the future climate.

Feed it all into the computer—and wait

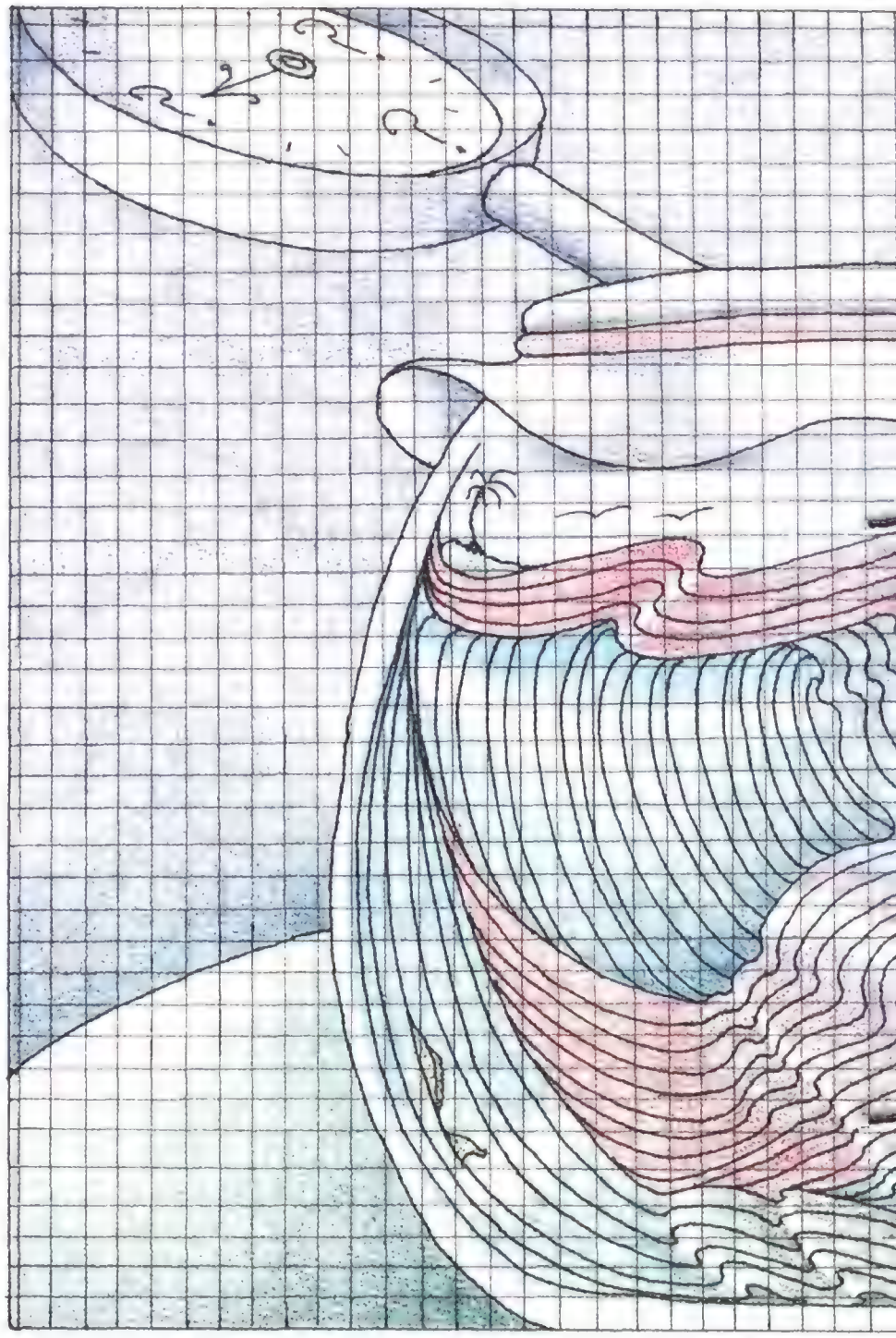
So let's suppose that you have made all your assumptions, assembled all your minimodels, have plenty of computer time lined up, and are ready to go with a GCM. What next? The first thing is to feed your set of instructions into the computer along with actual information about the atmosphere, oceans and so on. You then wait—and wait—and wait. A typical computer run for a moderately complex GCM may take several days, and the most complex models take the better part of two months to move forward in yearly steps to predict the climate 100 years into the future. In the end, the computer prints out things like temperatures and precipitation for the 300-mile squares into which Earth's atmosphere has been divided. And that's where the fun begins.

If you have picked an interesting calculation—perhaps a prediction of the climate in a world with twice as much carbon dioxide in its atmosphere as at present—you can bet that other groups, using different versions of the GCM, will have results that disagree with yours. This guarantees lively debate.

The controversies about nuclear winter and the greenhouse effect, in fact, are particularly good examples of what happens after the computers have finished. The former has weathered the period of debate, and scientists seem to have converged on something resembling a consensus. The greenhouse effect argument has not yet reached that point. Resolution, if it comes at all, seems a decade in the future.

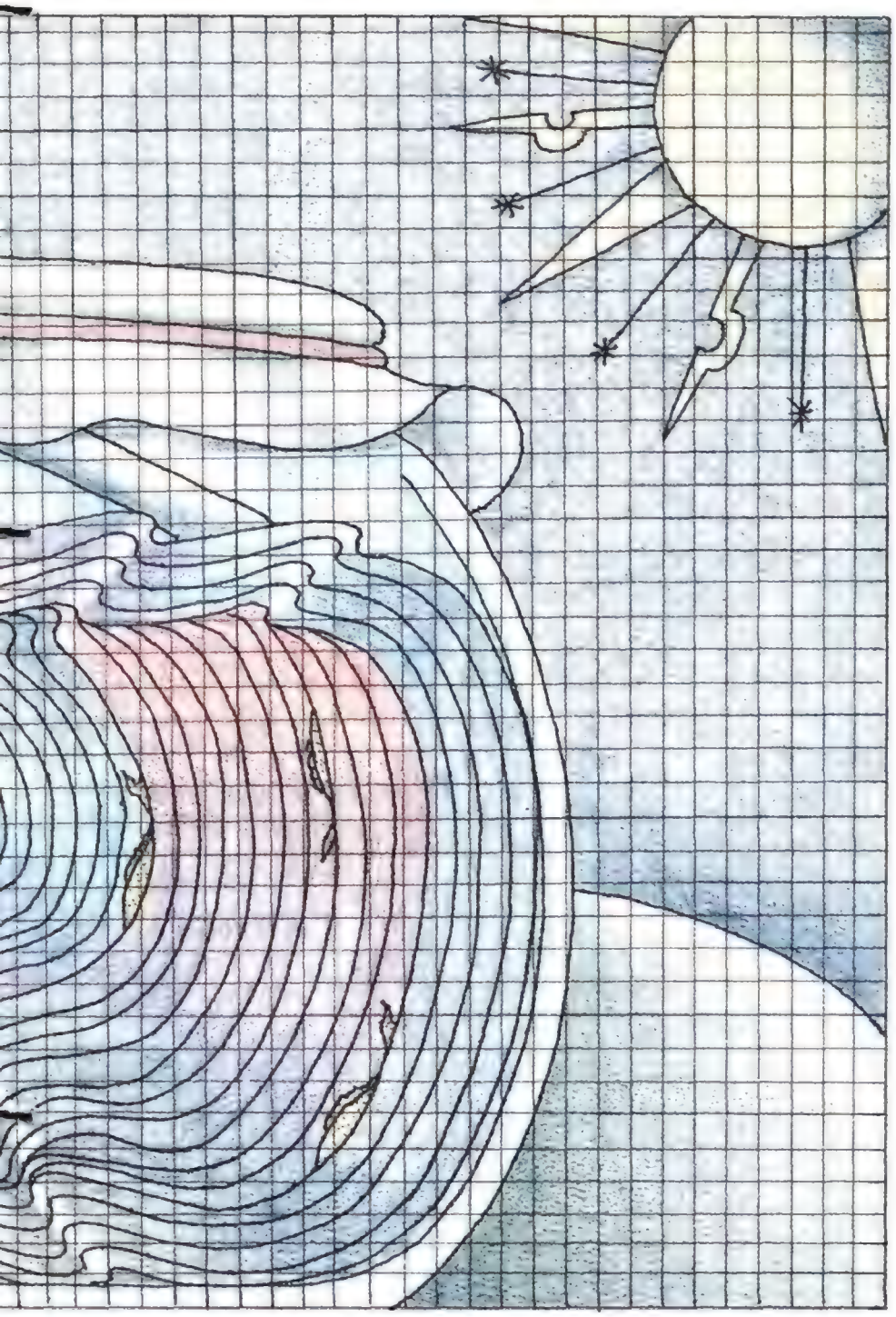
In most cases, scientific debate takes place in the relative obscurity of the scientific journals, far from headlines and evening news programs, so that the public is aware only of the final consensus. When the controversy is about something that has political overtones, however, the debate tends to be played out in the spotlight, and people can become unsettled by the apparent disagreement among the experts.

In the case of nuclear winter, the debate always had something of an academic tone. The main policy implication was that nuclear wars should not be fought, and scarcely anyone disagrees with that. In the case of the greenhouse effect, however, the policy questions are immediate and personal. Everyone who drives a car or uses electricity is responsible for adding carbon dioxide to the atmosphere, so actions designed to lower carbon dioxide emissions will affect us all.



To predict future climate, we must pin down how ocean currents move heat from one place to another.

The basic idea behind the greenhouse effect is simple. Energy from the Sun, mostly in the form of visible light, pours into the atmosphere all the time. Some of this energy is reflected by clouds; the rest is absorbed by and heats Earth. The heated Earth, in return, sends the energy back into space as invisible infrared radiation. There are some gases in the atmosphere—carbon dioxide, methane (natural gas) and water vapor being the most common—that absorb infrared radiation, acting as a kind of blanket to retain the heat. These gases



Vertical mixing and reverse currents along the ocean floor make this "minimodel" complex in itself.

have always been present, and there has always been a greenhouse effect on our planet. The real question is whether human activities are amplifying it.

Since the beginning of the Industrial Revolution, we have been burning fossil fuels to drive our industries, pouring carbon dioxide into the atmosphere in huge quantities (about five billion tons of carbon per year at last count). It is estimated that the amount of carbon dioxide has already increased by 25 percent above preindustrial levels. The question for scientists is: How will this increase affect Earth's climate?

The greenhouse effect came to the public's attention with a bang during the hot summer of 1988, but by this time the scientists involved were well into their debates. As with nuclear winter, some of the original predictions were truly horrendous: some GCMs included minimodels that had the Antarctic icecap melting and coastal cities being inundated. Today the predictions are less dire; most scientists believe that Earth will warm, but only from 3 to 8 degrees F by the time the "greenhouse gases" in the atmosphere have doubled, and some scientists argue for a warming of only a degree or so. The greenhouse gases are expected to double by sometime midway into the next century if present trends continue.

Two general types of questions are being pursued. The first has to do with whether the GCMs correctly describe the recent climatic history of Earth—that is, whether they have been validated or not. The second concerns disagreements about the sorts of changes that will occur in the future and, more specifically, questions of how changes in various minimodels within the GCMs affect the predicted outcomes.

Failed predictions weaken the models

One of the most widely quoted critics of the apocalyptic greenhouse predictions has been Patrick Michaels of the University of Virginia. "I'm a climatologist" he says, "so what I know about is the data. The models just aren't getting it right." He then proceeds to reel off a long list of failed predictions. The GCMs predict that Earth should have warmed 2 degrees in the past century because of the greenhouse effect; in fact, the data show no more than half that amount. Why haven't we been able to detect the predicted warming? The data show a 5-degree cooling in the North Atlantic since 1920, against the model's prediction of a warming. The list seems to go on and on. "And even if there is a warming," he concludes, "the data seem to indicate that it will take place by having nighttime temperatures rise while daytime temperatures remain the same. This would not be an apocalypse by any means."

Richard Lindzen of the Massachusetts Institute of Technology makes many of these same arguments, and adds a philosophical point. "Traditionally, science progresses by comparing theory to observation," he notes, "but all too often we find modelers comparing their predictions to the results of other models."

The argument of the skeptics, in other words, is that the climate models have not been validated, cannot yet be trusted, and therefore cannot serve as guides for public policy decisions.

But advocates of the global warming theory have their arguments, too. Stephen Schneider of the National Center for Atmospheric Research, one of the leading spokesmen for the majority view, states that greenhouse warnings "are not based on speculative theory, but on the fact that the models have already been validated to a considerable degree, though not to the full satisfaction of any responsible scientist." He

points out that Antarctic ice cores show a clear correlation between carbon-dioxide content of the trapped air bubbles and temperature through the end of an ice age 130,000 years ago, the onset of a new ice age, and the final retreat of the glaciers 10,000 years ago. "And don't forget," he cautions, "the effect of what we don't know could just as easily increase our estimate of warming as decrease it."

Thinking about the validation of the greenhouse models gets us quickly into what I find to be the thorniest question in this whole area: whether or not a human-caused greenhouse warming has already started and been detected. Was the dreadful summer of 1988 more than part of the normal ups and downs you expect in the weather?

Let me show how quickly you can get into a can of worms. One important part of the record is the ocean surface temperatures taken by ships at sea. Until the 1940s, these temperatures were taken by lowering a bucket overboard, hauling up some water and putting a thermometer into it. After 1946, it became customary to measure the temperature of seawater being brought into a ship to cool the engines.

Water being pulled up in a bucket might cool slightly before its temperature is taken, while thermometers in an engine room might pick up extra heat. The change in method might produce the appearance of warming where none actually existed. When corrections are made for the buckets, the measured warming drops about half a degree. Add to this the fact that wooden buckets were used until 1870, and canvas buckets thereafter, and it's no wonder scientists argue about whether Earth is actually getting warmer!

As is the case in so many scientific controversies, this one will only be settled when we have better and more-detailed data. Perhaps the best summary of the whole messy situation was given by Tim Barnett of the Scripps Institute of Oceanography. "There is no convincing evidence for greenhouse warming in today's world," he says, "but we may be able to see the signal by the end of the decade."

The second great constellation of debates has to do with disagreements about which of the models best describes what will happen in the real world. Of the many minimodels that go into a GCM, the kinds that seem to be drawing the most attention these days are those describing the oceans and those describing clouds. Of these two, the modeling of the oceans seems to be farther along.

The main effect of an ocean on climate is the redistribution of heat on Earth's surface. For example, water from the tropics flows northward in currents along the surface (think of the Gulf Stream), then cools, sinks and flows back to the Equator along the bottom. In addition, heat can move up and down in an ocean (a process scientists call vertical mixing), moving between the surface and the depths. Until quite recently, these effects either were not included in GCMs, or were included in a way that didn't allow them to change in response to changes in the atmosphere. When modelers were finally able to include a realistic ocean in their GCM, the results were rather surprising. Instead of having warming occurring in roughly equal measure in the Northern and Southern hemispheres, they now saw predictions with little warming (and even some cooling) in the Southern Hemisphere while the Northern warmed several degrees. Because of this imbalance, the predicted average global warming dropped about one degree. This is a clear example of a change in a minimodel producing a major change in the prediction.

Sample sizes are simply too large

"The main problem with ocean models is resolution," says Barnett, pointing out that the 300-mile grid of the GCMs is too large to capture many of the important features of a real ocean. Some groups are working on a scheme of modeling an ocean on 200-mile squares, while leaving the atmosphere with its traditional 300-mile resolution. Barnett is hopeful that these initiatives will pan out. "In this business," he says, "better resolution has always produced better models."

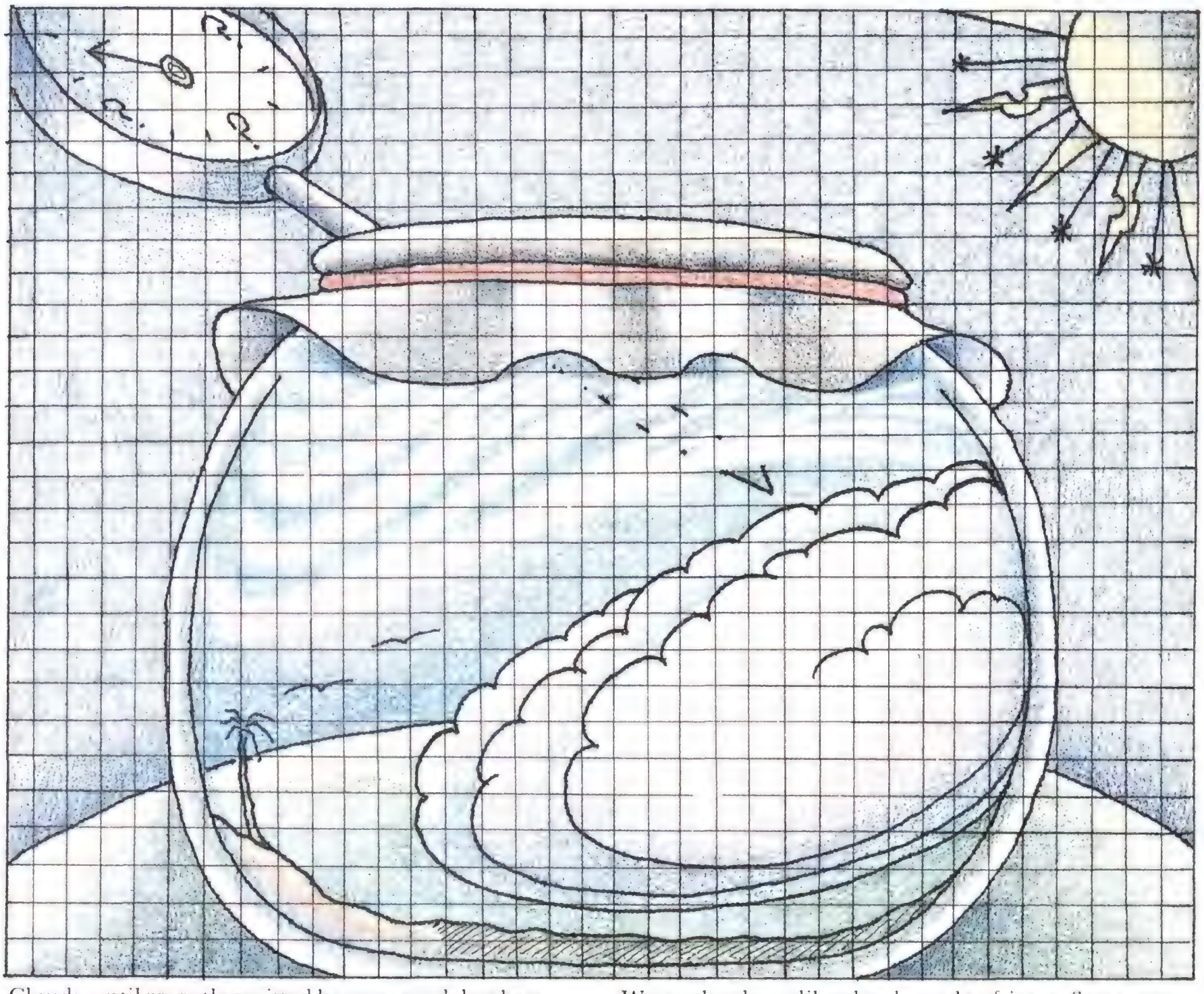
Clouds are the other component of the GCMs now attracting attention. The basic problem is that clouds play an ambiguous role. They reflect incoming sunlight and therefore contribute to cooling. They absorb infrared radiation leaving Earth, and therefore contribute to warming. Many scientists have argued that if Earth warms, more water will evaporate, more clouds will form, more sunlight will be reflected away, and the greenhouse effect will be reduced or nullified.

To find out more, I talked to John Mitchell of the British Meteorological Office. Mitchell illustrated his explanation by pointing out his window. "Those high clouds," he said, indicating some wispy cirrus clouds, "are made mainly of ice crystals. They're at a temperature of about [-75 degrees F]. They trap infrared radiation coming up from Earth, and the amount they trap is greater than the amount of incoming sunlight that they reflect. Their net effect is to heat Earth.

"On the other hand," he continued, pointing to some lower, puffy cumulus clouds in another part of the sky, "those clouds—composed of water droplets—reflect more than they trap, and contribute to cooling."

In late 1989, Mitchell and his colleagues published a milestone study of the effects of clouds on climate. The minimodel they used to describe clouds had a more realistic description of how particles (ice or water) "rain" out of clouds. At similar altitudes ice particles fall out of clouds quickly, whereas water droplets are "quite happy to sit there." "Water clouds" last longer, and thus, the net effect of all clouds is to cool Earth. Using the Meterological Office GCM, the inclusion of the new description of clouds changed an initial prediction of about 9 degrees F of warming to a prediction of about 3.5 degrees. "But the fact that we have a more detailed description of cloud physics," Mitchell cautioned, "doesn't mean that the overall prediction is more accurate." He feels it will be at least a decade before we have an answer to the question of the effect of clouds on climate.

So, as more attention is paid to the various parts of the "atmosphere" GCM, the models become more and



Clouds, until recently omitted by some modelmakers, have contradictory effects on Earth's energy balance. Water clouds, unlike clouds made of ice, reflect more heat than they trap, which results in a net cooling.

more realistic. Most of the researchers I talked to thought that it would take about ten years to bring the models to the point that they would find satisfactory. By then, the next generation of computers may even make it possible to answer questions like, What will happen to rainfall in the Midwest if carbon dioxide in the atmosphere doubles?

Imperfect models produce a consensus

For the foreseeable future we are stuck with the models as they now exist, with all their defects and uncertainties. Nevertheless, it is possible for scientists to come to some sort of consensus. The estimate quoted earlier, a 3-to-8-degree warming for a doubling of greenhouse gases, comes from the Intergovernmental Panel on Climate Change. Geoffrey Jenkins of the British Meteorological Office, coordinator for the report, noted that between 200 and 300 scientists contributed to it. "It's as close as you can get to a consensus in the meteorological community," he said.

Several different strategies have been suggested with regard to the greenhouse effect:

• Wait and see. "There is time and need for research," argues Richard Lindzen. If the greenhouse warming is really going to be mild, we can afford to wait until our predictions are less uncertain before taking action. This point of view has the advantage of causing little economic dislocation, and the disadvantage that, if the pessimistic predictions are true, the warming may be more severe if we wait than it would be if we do something right away.

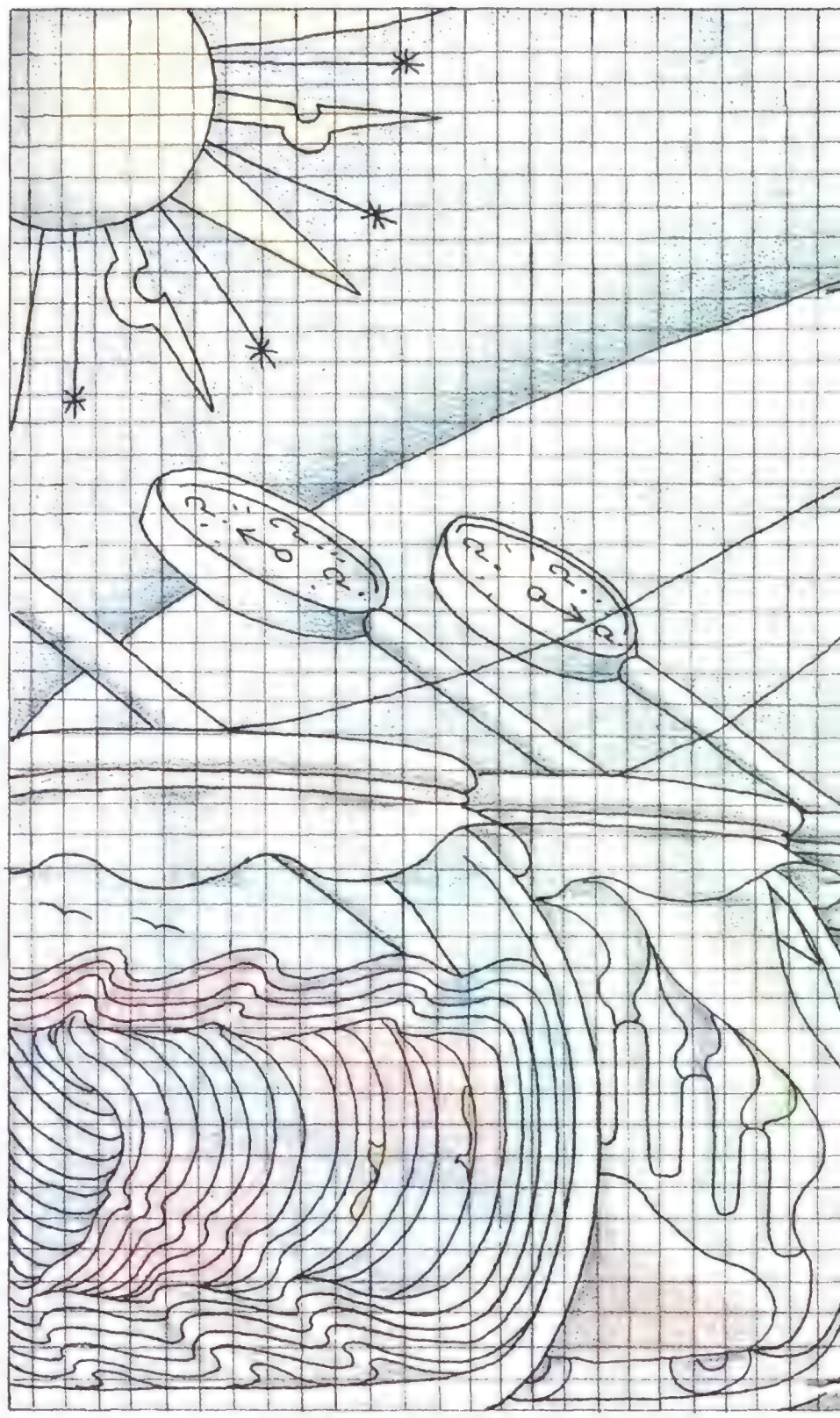
• Assume the worst and act accordingly. Some scientists call for 50-percent reductions in the use of fossil fuels, a halt to deforestation, and the reforesting of millions of square miles, an area several times that of Alaska. This approach has the advantage of dealing with the worst-case scenario immediately, and the disadvantage of producing enormous economic hardship, which may be unnecessary if the less pessimistic predictions turn out to be right.

• No regrets. The idea here is to undertake immediately those actions that make sense whether the warming predictions are right or not: for example, almost every effort to reduce air pollution and acid precipitation (see *Phenomena*, page 20) will help reduce greenhouse gas emissions as well. Further improvements in the energy efficiency of everything from refrigerators and cars to the largest industrial plants can make a big difference. Solar energy can be used for heating water or for splitting the hydrogen out of water molecules to create a fuel for vehicles that produces a much cleaner exhaust. Any reduction of our dependence on foreign oil is a plus, even without considering the greenhouse effect. The advantage is that this policy avoids unnecessary costs; the disadvantage is that should the worst-case scenarios turn out to be true, the "no regrets" response will be inadequate.

That's it. That is as far as science can take you in dealing with a problem like the greenhouse effect. The scientific community has told us what can happen, what the range of uncertainties in the predictions are, and what possible courses of action we can take. A decision now has to be made, *and that decision has nothing to do with science.* It will be, for each of us, an expression of our own values. You don't have to be a scientist from this point on—every citizen can and should make an individual decision.

For the record, I'll tell you where I have come down after all the reading and discussions. I am no less

Once the minimodels are as accurate as possible, scientists put them together to see the planet's future.

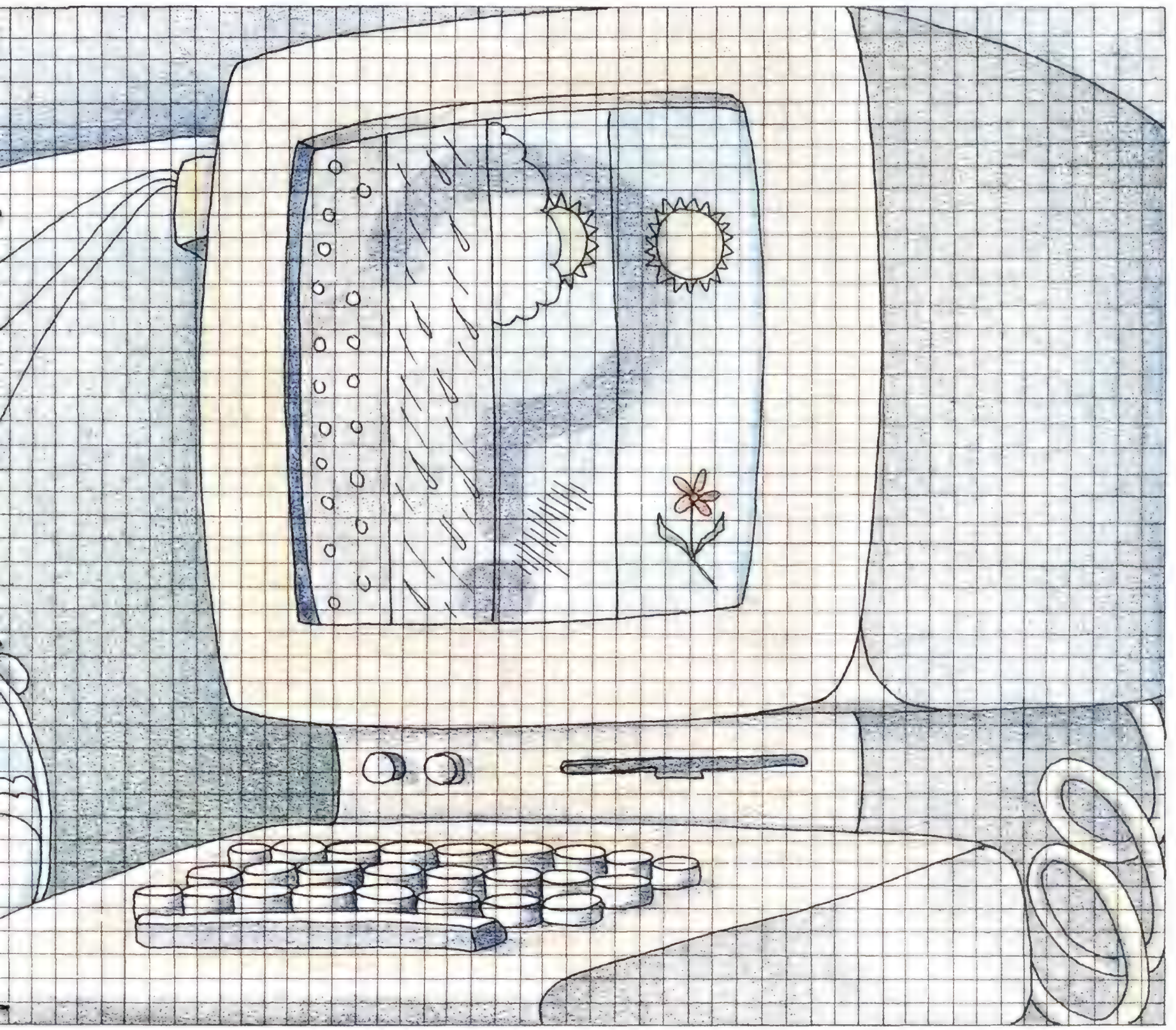


skeptical now than I was when I started, and my intuition is that the greenhouse warming could well range between 1 and 3 degrees. But while writing this article, I did a little experiment. I asked each scientist I talked to a question: What are the odds that the world will warm 4 degrees during the next century? The answers ranged from 25 percent to 75 percent, with the highest probability coming from a man who regards himself as a skeptic. Even though predictions for the most-probable greenhouse warming are going down, people in the field have a gut feeling that there is a reasonable probability that we could get a significant warming.

Deciding what to do about the greenhouse effect is like deciding how much insurance to buy. There is a risk, global warming. There is a costly solution, involving the eventual abandonment of fossil fuels. It seems to me that the proverbial prudent man should allocate some resources for insurance against the risk. The "no regrets" policy makes sense to me, and the only question left is how much insurance to buy.

As for the argument that we should wait until we are more certain before we do anything, Tim Barnett makes a good point in his public lectures. After agreeing that it could turn out that the whole greenhouse business is nothing more than a tempest in a teapot, he points out that it could also turn out to be much worse than we expect. "The best response comes from a Clint Eastwood movie," Barnett says. Dropping into a credible imitation of Dirty Harry, he faces his audience and asks: "D'yuh feel lucky, punk?"

But the answer we get is only as good as our original assumptions: we *believe* that Earth will be warmer.



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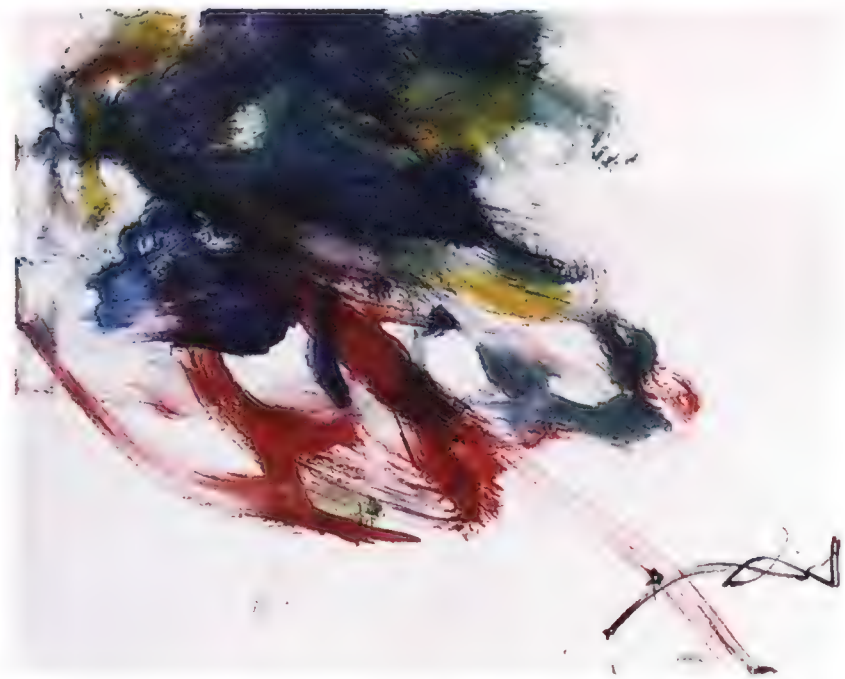
By Bil Gilbert

Once a malcontent, Ruby has taken up brush and palette



This work is available in a limited edition of 500 lithographs, each signed by Ruby, here at lower right.

Star of the herd at the Phoenix Zoo, where elephantine intelligence gets lots of respect, she's a gallery hit—already $30,000 worth

According to fable, three opinionated blind men encountered a docile elephant but did not know what it was. To investigate, they laid hands on various parts of the unidentified object. The first, grasping a leg, was certain it was a tree. The second, holding the tail, said he had clearly come upon an enormous coil of stout rope of which he had the free, frayed end. Fondling the sinuous trunk, the third pilgrim ridiculed his companions for not recognizing a snake when they met one. The moral of this parable is a good one to keep in mind, like a mantra, when thinking about Ruby.

Ruby is a 17-year-old, 8,000-pound elephant, a female of the Asian species. She resides in Arizona at the Phoenix Zoo and has six regular companions: Kewana and Kinte, 11-year-old female African elephants; and Jerry Brown, Tawny Carlson, Mike Richardson and Anita Schanberger, all young adult humans. Zoo administrators speak of the latter four as elephant keepers, but this inadequately describes their relations with the animals and is a bit patronizing. They might better be called elephant people and hereafter will be.

Together these seven individuals have created an interspecies herd in which the elephants have seemingly made a considerable effort to become, behaviorally, more like people, and the people more elephantine. What they have done collectively is itself remarkable. However, without Ruby's individual accomplishments I would not have become acquainted with any of them.

Ruby paints. An elephant person brings out an easel, a stretched canvas, a box of brushes (like those used by human watercolorists) and jars of acrylic paints fixed onto a palette. With the marvelously manipulatable tip of her trunk, Ruby taps one of the pigment jars and then picks a brush. The elephant person dips the brush into this jar and passes it to Ruby, who begins to paint. Sometimes she asks, in her own way, to have the same brush refilled repeatedly with the same color. Or she may change brushes and colors every few strokes.

After a time, usually about ten minutes, Ruby puts her brushes aside, backs away from the easel and indicates that she has finished. She is sometimes coaxed experimentally to continue but refuses to add to a work once she is, apparently, satisfied that it is complete. Occasionally she signals for a fresh canvas and creates a second composition on it. However, as a rule she does only one painting at each of her more-or-less-weekly sessions. To test the possibility that Ruby would paint with any color put on the brush, the elephant people have dipped brushes in jars other than the ones she has picked. They say they have not fooled her in this way, that she waits, without painting, until she gets the color she wants.

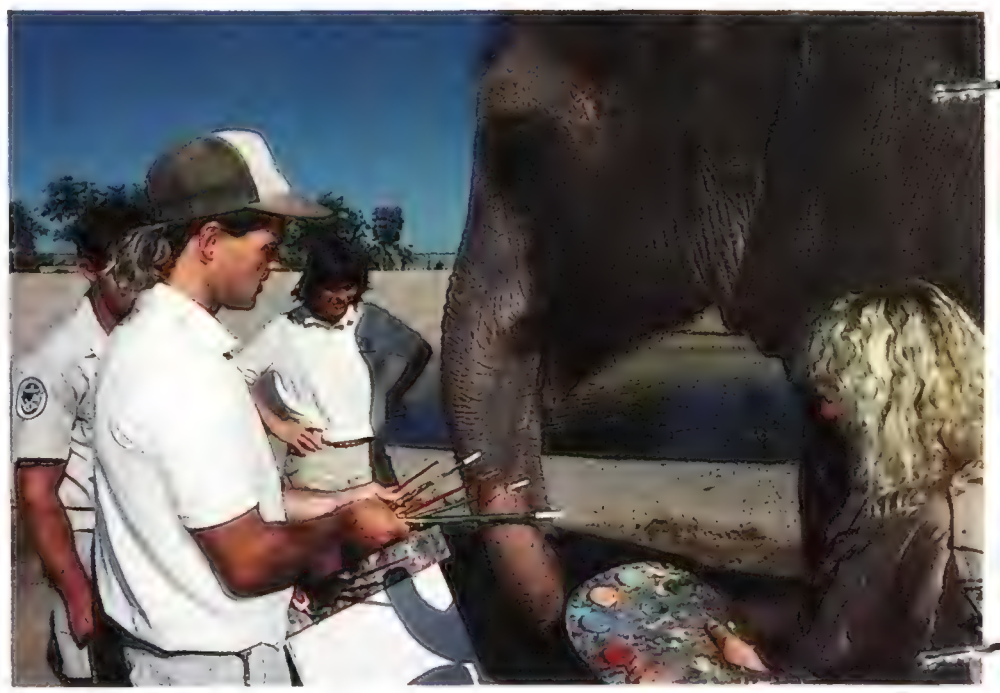
Anita Schanberger has been in correspondence with psychologists and veterinary ophthalmologists who are interested in Ruby's vision. Some suggest that she may not see color as humans do at all, but may make her selections according to the luminosity of the pigments, which appear to her only as shades of gray. Whatever stimuli she is responding to, Ruby repeatedly demonstrates strong preferences about when and where to use, for example, what we call "red" and "blue."

With her trunk tip, the artist begins by selecting a color from a palette offered by helper Tawny Carlson.

Photographs by Dick George

PHOENIX
ZOO

Elephant person Jerry Brown gives Ruby her choice of regular artist's brushes (right). After he dips it in the selected paint, the elephant grasps the brush with her trunk. While Brown, Mike Richardson, Anita Schanberger and Carlson observe, Ruby paints (above). To determine if she is actually choosing specific colors and brushes, zoo staff have tried to give Ruby ones other than what she has pointed to. She balks at such attempts to fool her. Experts are uncertain about whether she actually recognizes specific colors or is just responding to variations in luminosity. Typically, after about ten minutes, Ruby flips up her trunk (opposite) to say to her assistants that she considers the work finished.



Ruby has done more than 200 paintings, all abstract, at least in our terms. In some she uses heavy brushstrokes and bright, bold colors. Others suggest a traditional Japanese style, a few delicate lines of color on an expanse of empty canvas. No two of them are close to being identical. Ruby has been painting since mid-1987. She was first given the opportunity because it occurred to the elephant people that it was something she could and might like to do.

Whatever it has done for Ruby, her painting has indisputably profited the Phoenix Zoo. Bill Bishop is a prominent local art dealer as well as a longtime friend and supporter of the zoo. In 1989 he offered to exhibit a collection of Ruby's works at his Scottsdale gallery and, if there was a market, to sell them without charging a commission. Initially, zoo officials hesitated. After considerable debate over the ethics of receiving money for Ruby's creative efforts, permission for the show was granted, with the stipulation that all proceeds would have to go directly into the zoo's Conservation Fund, which supports work with rare and endangered species, including elephants.

A Frankenthaler, a Motherwell and a Ruby

The elephant people selected 39 of what they considered to be Ruby's most attractive compositions. Bishop priced them as he would the paintings of an interesting but unestablished local artist, that is, from $650 for the largest (36-by-24-inch canvases) down to $250 for the smallest (12-by-18-inch ones). Zoo staff thought nobody would pay so much but bowed to Bishop's knowledge of the art market, which proved to be sound. Held last April, Ruby's show was understandably preceded by a lot of publicity and drew a large crowd. By the second afternoon all 39 paintings had been sold, and the Conservation Fund was enriched by nearly $20,000. Another $10,000 worth has since been sold. There is a two-month waiting list of buyers, and Bishop is eager for another show.

He admits that while they may have been initially interested only for zoological reasons, many who attended Ruby's show became genuinely impressed with her artistry. This does not surprise him: "The paintings are attractive compositions of color and space, which give pleasure." Agreeing with this opinion, one of his regular customers, a serious and affluent collector of modern art, told Bishop that she bought a Ruby to hang with a Helen Frankenthaler and a Robert Motherwell.

Elephants can move and rank cords of wood, pick up dimes from flat surfaces, play xylophones and do many other deft, manipulative things with their trunks, all of which is to say that painting is not physically a remarkable feat for these animals. Ruby is neither the

It isn't just for fun that the zoo encourages Ruby and herdmates Kinte (left) and Kewana (right) to paint. Activities foster cooperation essential to the elephants' care, and keep them from getting bored and antisocial.

first nor the only elephant to work with brushes. There are relatively accomplished elephants painting at other zoos, but Ruby has enjoyed the most renown and commercial success. Her two African elephant companions paint a bit, though much less frequently and skillfully than Ruby. They are occasionally given the chance to try, mainly so they will not become jealous of her and the attention she receives. When they indicate they want to take part, a sheet of cardboard is spread on the ground for them. As yet, the elephant people see no reason to waste expensive canvas on the African elephants, neither of which is comfortable working at the easel. Usually, Kewana and Kinte are satisfied—perhaps simply because they have established their right to participate—to make a few perfunctory, usually monochromatic, strokes on the cardboard.

One day when Tawny Carlson was with the animals, Ruby made two fine paintings, one after the other. She then went off for a snack of hay. Kewana wandered into the painting area and was given a brush and cardboard. After making a few black smears she lost interest and departed. On returning, Ruby immediately picked up the brush Kewana had dropped and had it filled with a brilliant red. She then vigorously painted over much of what the African elephant had done and added a large, emphatic, yellow check mark (p. 50). "She certainly acted like she was contemptuous of what Kewana had painted and of us for letting her do it," says Carlson.

Ruby was born in 1973 to a female who was trained and used for forestry work in Thailand. When she was 7 months old, Ruby was shipped to the Phoenix Zoo. Still being bottle-fed, she was exhibited in the children's section and became its major attraction. She thrived physically but not, it seems, spiritually. In retrospect, a major problem was that for seven years Ruby was the zoo's only elephant. By nature extremely social creatures, elephants suffer if deprived of companions, but isolation is probably especially hard on very young animals. Elephants develop slowly, at about the same rate as humans, and normally during their early years in a herd are constantly guided by other elephants.

Ruby was regularly around people (who can serve captive elephants as surrogate herdmates), but in her early years staff changes were frequent. She had neither the time nor perhaps the inclination to become greatly attached to any of her keepers, each of whom worked with her in different ways for a few months and then left. For practical reasons, elephants cannot be simply kept in captivity but must be constantly managed. They are so huge and powerful that routine maintenance chores are all but impossible unless they can be directed to move and stand here and there, lift their feet and trunks, open their mouths, lie down and kneel. Also, to simulate the activities of wild or working animals, zoo elephants are often required to move logs and boulders, pull wagons, allow themselves to be ridden, balance balls, roller-skate, dance or engage

Wildlife writer Bil Gilbert's books include How Animals Communicate *and* Chulo, *a study of coatimundis. His profile of the badger appeared in the January issue.*

in other exercises designed to keep them busy and fit.

Ruby's first human associates—all men, coincidentally—were conventional, though not physically abusive, disciplinarians who took the no-nonsense view that it was their duty to make her do what they wanted. They were little concerned, so it is now said, with her interests and moods. For whatever reasons—isolation, disrupted education, insensitive keepers—Ruby developed some odd and, for people, unpleasant habits. Among other things, she played sadistically with ducks and geese who wandered into her enclosure. Using grain from her food trough, Ruby lured them toward her. When one came close enough, she surreptitiously raised a front foot and then brought it down quickly, stomping the unfortunate bird to a pulp.

She masturbated frequently, at times almost incessantly. "Every time you'd turn around," says Carlson, who first met Ruby in 1979, "there she'd be, getting off on a log." Perhaps, as Carlson speculates, because they were the only vaguely elephantlike things she ever saw, Ruby became enamored, clinically, of dump trucks, bulldozers and other large, lurching machines. When one came near, she became very excited—she squealed and pranced. One morning, a backhoe operator drove into the elephant area. When she spotted the "attractive" machine she charged and attempted to mount it. "The poor guy was terrified. Who wouldn't be?" says Carlson. "At least he turned off the motor before he ran."

No more passes at heavy machinery

More seriously, Ruby began to threaten keepers. After being roughly bumped and shoved, one of them quit his job on the spot, fearing the next encounter might be worse. There were at least four similar incidents, all involving men against whom, presumably because of unpleasant early experiences with that sex, she held a long-lasting grudge. Some zoo officials felt that Ruby might become, or perhaps already was, a very dangerous animal. In India alone, wild and working elephants account for about 150-200 human fatalities a year. All zoo keepers know of colleagues who have been crushed or stomped by captive elephants. The lethal potential of these animals when angry or vengeful is obvious, but even a confused or clumsy one can accidentally maim or kill.

But Ruby has changed. She is now cooperative and even-tempered. She treats Jerry Brown and Mike Richardson with the same respect and affection as she does the two female elephant people and no longer seems to be prejudiced against men in general. Ruby has not stomped a duck or goose for years and no longer shows any inclination to make passes at heavy machinery. Her transformation is attributed to the fact

Schanberger and the others chat frequently with Ruby to develop rapport and ponder the elephantine mind.

Eight feet tall, 8,000 pounds, when she talks, they listen. But in fact, Ruby seems to regard the elephant people as senior members of the herd, from whom she takes directions; still, they must be given politely.

that during the past decade she has been introduced to other elephants and to new, compatible people.

In 1982 the zoo obtained Kewana and Kinte, who had been taken together from a herd in Zimbabwe. Carlson, who was present at the first meetings between the three animals, says they ranged from awkward to ludicrous. "The African elephants had at least some social experience and tried to make up to Ruby. But she didn't really know what an elephant was and had no idea how to act around these new things, whatever they were."

As an example of the initial difficulties: in casual meetings between Asian elephants, each offers its trunk, expecting the other party to blow gently into it. When African elephants meet, they stick their trunks into each other's mouths. When Kewana and Kinte first tried to introduce themselves to Ruby in their own polite oral fashion, she seemed shocked, says Carlson, and retreated as if she had been accosted by nasty lunatics. Eventually the animals reached a compromise and now greet one another by patting cheeks. In other matters the elephants worked things out between themselves. Kewana and Kinte are still greatly attached but accept Ruby as an agreeable companion. The three are never far apart, work and play cooperatively, share food and have never had a truly hostile confrontation.

The elephant people, because of their obvious enthusiasm and competence, have been given considerable freedom by zoo authorities to develop their own methods for dealing with the animals. The basic philosophy of what might be called the Phoenix School of Elephantology can be summarized as follows:

- Captive elephants understand they are not people, and vice versa. But they can be convinced that people are capable of reasonable and decent behavior. If people treat elephants with respect and affection, elephants will more than reciprocate.
- Having evolved as herd animals, elephants are innately inclined to live in hierarchical groups, where some members regularly give directions to others. Captive elephants, perhaps because of the strangeness of their circumstances, readily accept people as lawmakers if decrees are presented in ways that the animals think polite and sensible.
- When elephants break an accepted rule of the group they have a very stand-up attitude about being corrected; in fact, they seem to welcome discipline for proprietary reasons. However, they are easily insulted, and often become sullen and stubborn if they are wrongfully accused of misbehavior.
- Peer acceptance is of great importance to elephants. Properly understood, this trait can be a powerful lever

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for altering old behaviors or teaching new ones. Giving praise is one of the best ways to reward an elephant, and withholding it is an effective means of punishment.

• Elephants can be bullied, and to some extent controlled, with clubs, chains, electric cattle prods and other devices. But coercion destroys trust and, therefore, once employed must be continued. It takes a lot of abuse to make these massive animals change their minds and ways, and they have long memories about how and by whom the abuse was inflicted.

• Initially it takes considerable time and patience to develop rapport, but in the long run it is less arduous, safer and more interesting to work with a trusting, cooperative elephant than with a sullen, vengeful one.

Each elephant person carries a short stick with a blunt metal hook on the end. This tool is too slight to hurt or threaten an elephant but is used to touch, nudge and tap it, in somewhat the way that elephants bump and poke their tusks and trunks to make tactile exchanges with one another. The stick gives the elephant people added status—and reach—enabling them to get the attention of the elephants and instruct them in what elephants consider a natural, mannerly fashion.

All people I know who work well with animals talk to them a lot. At the very least, one-way conversation seems to soothe the beasts, so to speak, and often they seem, by their responses, to comprehend some of it. The Phoenix elephant people chatter constantly to their animals. Imbedded in the talk are some 65 specific words of command, but these are camouflaged, at least from strangers, in a running, bantering commentary.

Every day, for cooling and cleaning, the elephants are washed down. One morning Carlson and Brown started with Ruby and Kinte. Waiting her turn, Kewana spotted an unused hose and stealthily picked it up with her trunk. (Elephants seem to believe that if they move slowly and quietly they are invisible. This may be somewhat true in the bush but is obviously not true in a bare paddock or barn.) The elephants greatly enjoy fiddling with hoses, although it is usually against the rules. Neither surprised nor fooled, Carlson wheeled on Kewana. "OK, I see you. Put it down. You know elephants who steal hoses don't get chickies."

Trunk hanging down, overwhelmed by guilt

Like a child caught with an illicit cookie, Kewana dropped the hose, retreated a few paces and stood with her trunk hanging down, giving every appearance of being overwhelmed by guilt. She remained so until Carlson finished what she was doing, came up and gave the elephant a yellow, chicken-shaped marshmallow of the sort found in Easter baskets. "It's OK, Kewana. We know you won't do it again." Comforted and pardoned, Kewana waited contentedly, fondling her chickie, putting it in her mouth and taking it out, until it dissolved.

To facilitate bathing and medical checkups, the elephants have to stretch, spread their legs, hold up their feet, squat, lie down, roll left, roll right and hold various positions for as long as necessary. The elephant people talk to them encouragingly but give very few overt commands. Working with Ruby, Schanberger once paused toward the end of these balletlike exercises and asked, in a mildly reproachful tone of voice, "All right, what have we forgotten?" Seemingly perplexed for a moment, the elephant then kneeled. "OK, Ruby, good for you," Schanberger cooed, while taking a blood sample from her ear. "We forgot the kneel. What a good elephant to remember that!"

Explaining the exchange to me, Schanberger says, "Elephants are very smart but they sometimes can be intellectually lazy. You have to exercise their minds as well as their bodies. We think asking them to remember things they have learned gives them more to think about than if we just keep telling them what to do."

During her first years, while living alone in the

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Ruby did *Fire Truck* after seeing fire engine and its blue-clad rescue squad in action.

With a red wash and emphatic yellow mark, Ruby indignantly corrected a work by Kewana.

children's section of the zoo, Ruby started doing what people around her took for doodling—going off by herself to arrange pebbles in piles or, with a stick in her trunk, to scratch lines on the ground. As she grew older she did this more often and seemed increasingly engrossed by the activity. Since it was harmless, not much thought was given to this behavior, and it was dismissed as being another of her many quirks.

Then, in 1987, Carlson saw an elephant in Southern California who had learned to paint. She thought of Ruby and decided to offer her some lessons. Ruby immediately showed interest and within a week had mastered the basic techniques. She has become increasingly adept with brushes, and her present paintings are generally much more intricate than the first, rather crude ones. The elephant people believe, but cannot prove, that she is now sometimes influenced by things she sees around her and uses them, to some extent, as subjects. They say that she prefers bright colors on bright days but selects somber ones when the weather is overcast. On a number of occasions they have noted that a composition will be dominated by a color that is approximately the same as one that stands out on a shirt or dress worn by somebody watching her paint.

A pat and a shuffle for a job well done

The elephant people think Ruby's most thought-provoking painting is one they call *The Fire Truck* (left). On weekends her easel and materials are occasionally set up near an overhanging public viewing area so zoo visitors can watch Ruby paint. One afternoon while the painting materials were being arranged, a man in the large crowd collapsed. A fire department rescue squad was summoned and shortly arrived, sirens screaming, in the elephant area. The paramedics put the man (who later recovered) in an ambulance and rushed him to a hospital.

Ruby, say the elephant people, watched the action intently. When the commotion subsided she took up her brushes and made a particularly wild, bold composition. A major feature of it is a red figure that does indeed suggest flashing and movement. In front are several strong blue dabs and swathes close in color to the uniforms worn by the members of the rescue squad.

It appears that Ruby enjoys a job well done. Sometimes, after having completed a painting, she will back away, do a little dancelike shuffle, pat herself on the cheek with her trunk and pull her nipples. She also makes these gestures on other occasions when she is in a mood that, according to the elephant people, can be most accurately described as elated.

Before I met Ruby I thought the crucial question was, Why does she paint? After spending time with

her, the answer seems obvious. This elephant evidently chooses to paint because it gives her pleasure. Beyond that, there have been various other explanations. The motor activity of painting and the visual stimulation provided by the paint may be sensually satisfying. Perhaps painting is an unusual "displacement activity," one based on an innate urge. For example, she may feel a need to break off and wave a tree branch. Unable to satisfy this desire in captivity, she sublimates it by swishing a brush across a canvas. Possibly the behavior has been learned for social reasons, as a means of getting attention and approval from the elephant people.

There is another speculative explanation, one that most interests me. It came to mind because of Ruby's deliberate manner when she paints, behavior that strongly suggests she does it until, but only until, she feels a particular work is finished.

Artists of our own species often paint because they feel compelled to express their feelings about the external world or, particularly in the case of abstractionists, their unique interior realms. The fear of anthropomorphism and zoological chauvinism aside, there is no evidence to rule out the possibility that Ruby has a powerful urge to depict, with color and line, her visions of what she and other things are.

I came away from the Phoenix Zoo with a painting Ruby made while I was there. I enjoy it for the simple visual pleasure it brings, and it certainly is a conversation starter—and stopper. But I am especially moved by it because of where it came from—inside the mind of an elephant. To me it feels as though it depicts a scenic view, an impression of, and from a corner of, the inner world of other bloods. Maybe I'm calling a trunk a snake. Maybe not.

Ruby and Schanberger return from work. No mere painting machine, Ruby seems to pick colors that match the light of the day and sometimes ones that stand out on clothing worn by zoo visitors watching her paint.

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CABERNET SAUVIGNON
OF CALIFORNIA

By Jake Page

Writing got a lot easier when the old 'manual' was new

It is an endangered species now, but a little more than a century ago the sturdy manual typewriter started a technological revolution

I didn't know at the time that it had some 2,000 separate parts, or that one of its progenitors had been called a "literary piano," or that in four decades it would be an endangered species. All I knew was that it was shiny, black and mysterious, had fancy gold leaf on the cover, and promised . . . well, magic. It even had a key that said so: Magic Margin.

It took me a while to figure out that the Magic Margin system on that manual typewriter was nothing more than a handy way to adjust the margins without having to reach into the machine's innards. Being 11 years old, I didn't have all that much to say, and so after a great burst of enthusiasm, during which I learned that if you hit the keys too fast, the typebars got tangled up and then your fingers got inky when you untangled them, I lost interest. My typewriter ended up in a closet and I forgot about it. If I still had it today, I could probably sell it for $20 to John Lewis.

Although he appears normal enough, Lewis is a self-proclaimed nut when it comes to typewriters. I met him when I was in extremis. My livelihood, a Royal 440 manual, had developed some form of arthritis, and after being frustrated by a dozen or more people who advertised (however falsely) a capacity to repair typewriters, I finally came across Lewis, who operates Business Systems and Machines Inc. on a busy street in Albuquerque. His showroom has the aura of a museum exhibit. Along with all the sleek steeds of modern officedom you expect to see on display in such a place are some 20 fossils from the days when the functions of writing and printing were first conjoined. Lewis not only collects old typewriters; he restores them to working condition and is one of the few people in the Albuquerque metropolitan area, or in all of New Mexico, who can deal with the gerontological maladies of manual typewriters. Just try finding a John Lewis in your neighborhood.

There seems to be but one place in the entire nation's capital, for example, where you can tune up a manual: North's Office Machines, which sports part of its founder's collection of antique equipment in the window of its fashionable K Street address. North's repairs about 50 manuals a year (and a lot more electrics). For $89.50, your standard desktop machine is taken out of its case and subjected to a chemical wash, then adjusted and lubricated. Usually, broken parts can be repaired (if the pieces have been kept). Otherwise, another machine can be cannibalized.

With proper maintenance, Lewis assured me, such drastic surgery shouldn't be necessary. Any older typewriter is capable of functioning for at least 80 years, he said, meaning that mine had well over 50 years to go.

Why worry about longevity with a machine that's already obsolete?

It all depends on your point of view.

If, for instance, you're a writer who was weaned on a manual, you probably agree with the English author and poet Robert Graves, who wrote: "A veteran typewriter of which you have grown fond seems to reciprocate your own feelings, and even to encourage the flow of thought. Though at first a lifeless assemblage of parts, it eventually comes alive." If, on the other hand, you're an office manager employed by a large American corporation, you're liable to decree: "Manual type-

Typebars in 1873 Sholes and Glidden are arranged in a circle (top view, opposite); keyboard is similar to that used today. Most typewriters shown here are in the National Museum of American History collection.

Photographs by H. Brooks Walker

writers are inefficient, get rid of them." But if you own a small- to medium-sized company in Mexico, the Philippines or Thailand, chances are you'll exclaim: "Hey, buy up all those machines—they're just what we need!"

In little more than half a century, the manual has gone from state-of-the-art office workhorse, in the United States, to outmoded contraption. It has been relegated to the junk heap, in a manner of speaking, by not one but two technologically more sophisticated successors, the electric typewriter and the personal computer. It hasn't really been scrapped, however, because even as it's being phased out in this country, it's enjoying popularity abroad. Chances are, therefore, that these sturdy throwbacks to an earlier era will still be leading useful lives long after those of us who pamper them have quit ours.

What may well have been the first typewriter was conceived in 1714 by Henry Mill, an English engineer. Mill was granted a patent for a machine capable of impressing letters on paper "so neat and exact as not to be distinguished from print."

The first machine to actually be called a Type-Writer is generally credited to a printer, editor and politician from Milwaukee named Christopher Latham Sholes. His creation, produced in 1867 with the help of two collaborators, incorporated a ribbon that had to be hand-inked. He and a partner tried to interest the Automatic Telegraph Company (later Western Union) in buying the manufacturing rights to the thing for $50,000, but Western Union said no dice. They had an enterprising employee at the time, fellow by name of Edison, who had his own design for a typewriter, which eventually became instead the forerunner of the stock market ticker tape.

Sholes became pessimistic after the telegraph company's rejection. Many of his backers had already pulled out. Even if another manufacturer did turn up, he feared, "for a while there may be an active demand for [the typewriter], but then like any other novelty, it will have its brief day and be thrown aside."

One of Sholes' chief backers was a hustler named James Densmore. Taking advantage of Sholes' dejected state of mind, Densmore and another backer persuaded him to sell them the rights to the typewriter for a fraction of its worth. Then Densmore met Philo Remington, whose New York gun manufacturing business, like all such businesses after the Civil War, needed new products and markets. Remington was already making sewing machines. A deal was struck whereby, at virtually no risk, he would produce 1,000 typewriters for sale. Densmore sat back and waited for the money to

Jake Page has written 15 books and more than 200 articles on his Royal 440 typewriter. Recently, he wrote an article for SMITHSONIAN *about starlings.*

Revolving handle on this unsuccessful 1856 model activates type when point on end is pressed into holes.

Double keyboard on 1892 Caligraph offers uppercase and lowercase letters. Elongated front conceals levers.

Classic Underwood No. 5 was first machine with typebar allowing a typist to see letters on paper.

Crandall model, circa 1892, used a type cylinder with characters on it that rotated to select letters.

roll in, demonstrating his faith by giving up the use of the pen, even for his signature.

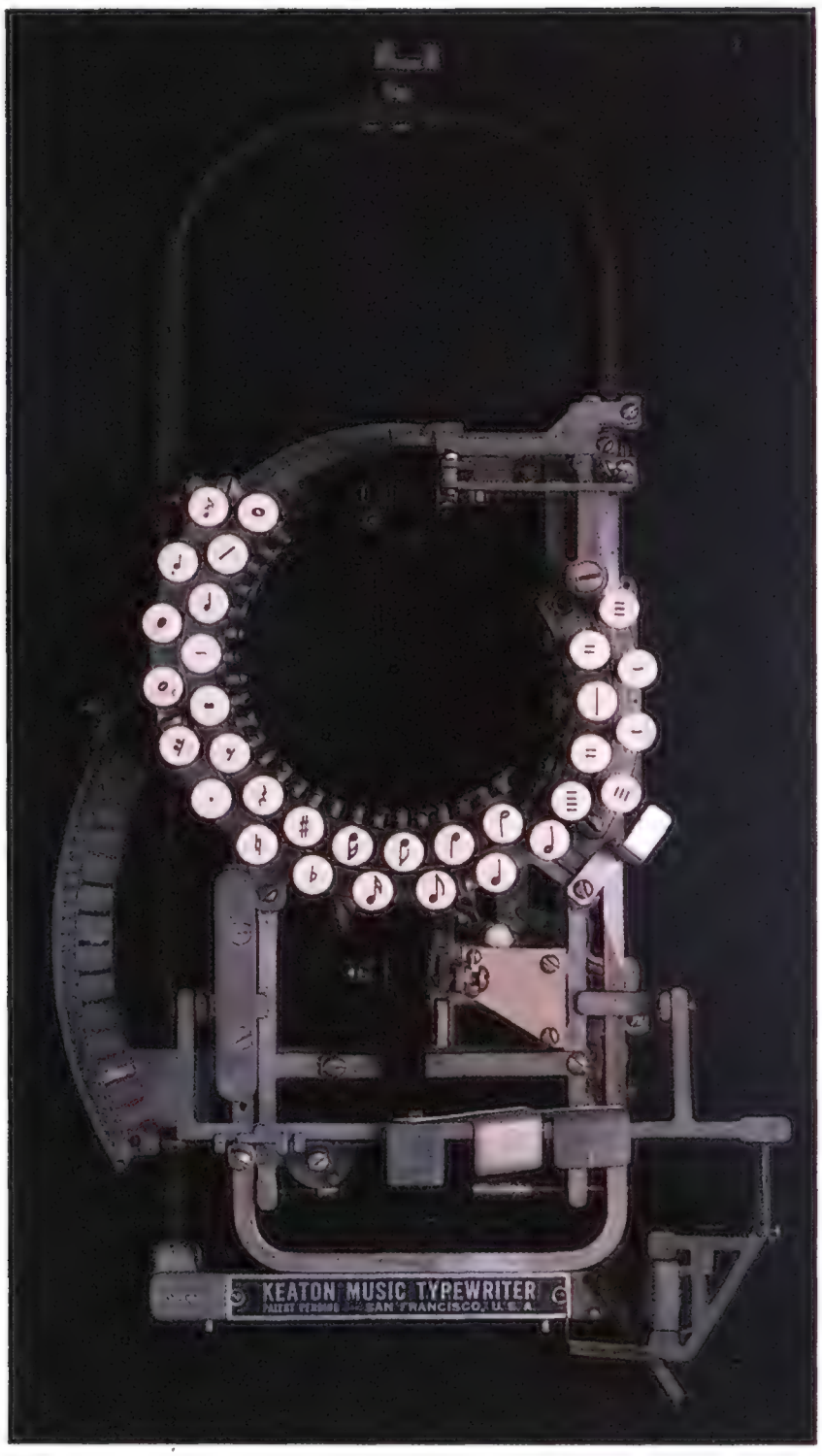
Remington's first shipments went out in 1874, and many were immediately recalled for adjustments. Those that did get to dealers sat on the shelf. People flooded to see them, but no one bought them. Well, almost no one.

In late 1874, Mark Twain stopped in a Boston store and saw a person demonstrate the new typewriter, the Remington No. 1, typing 57 words in a minute. Twain bought one on the spot. The price tag was $125, a lot of money in those days and an expensive gamble on an untried technology. He later found that the typist's 57 words a minute were the result of typing the same phrase over and over again. But Twain took the No. 1 home and wrote a letter to his brother: "I AM TRYING TO GET THE HANG OF THIS NEW F/FANGLED WRITING MACHINE, BUT AM NOT MAKING / A S-ING SUCCESS OF IT." He went on to say, "IT PILES AN AWFUL LOT OF WORDS ON ONE PAGE. IT DON'T MESS OR SCATTER INK BLOTS AROUND. OF COURSE, IT SAVES PAPER." Twain would soon master his machine sufficiently to become what may be the first author to submit a typed manuscript to a publisher—possibly *Tom Sawyer*, published in 1876.

Remington's sales in the typewriter's first six months were a mere 200, and things didn't get much better in the ensuing years. The Remington No. 2, introduced in 1878, incorporated the shift bar, an enormous improvement, but sales remained virtually nonexistent. Apparently hardly anyone was comfortable with the notion of mechanical writing. Exquisite penmanship was regarded as a sign of taste, a good mind and sincerity. Intruding a typewriter into this social matrix was dangerous. One pioneering insurance salesman in Texas did so and heard back from his client: "I do not think it was necessary then, nor will it be in the future, to have your letters taken up to the printers and set up like a handbill. I will be able to read your writing and am deeply chagrined to think you thought such a course necessary."

When business began to get keyed up

The first major employer that Densmore approached was the federal government, where it was pointed out that the rules for the preparation of documents said nothing about typewriters so of course it was simply impossible to use them. But some years later, in 1899, the Assistant Secretary of the Treasury ordered that all departmental records be typewritten. Business had already begun to see the light, aided by the blossoming of typing schools. The first of those was established in New York City by the YWCA, which provided a grow-



On manual (top view) used for notes and other musical symbols, typing unit is mounted above flat platen.

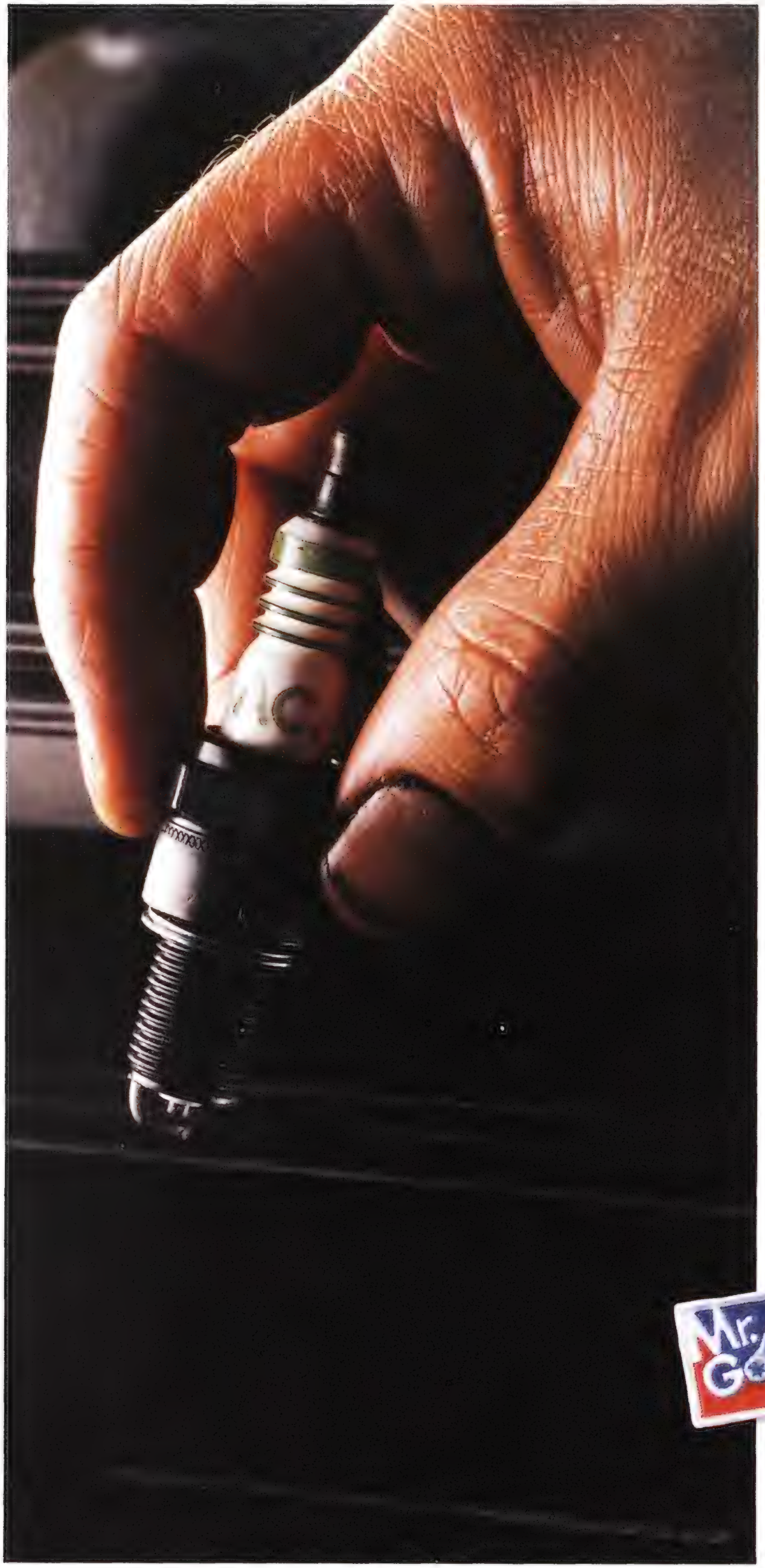
ing army of willing typists. You could say that the typewriter liberated women from a certain kind of drudgery—factory work—and put them in neat, professional offices. In due course, however, it also came to be regarded by some as an instrument of oppression with which male employers kept women chained to low-level office jobs. As early as 1910, according to one estimate, two million typewriters were being used in this country. About a third of them were manned, as it were, by young women working as typists.

Once people began to use typewriters, it was only a matter of time before disputes broke out over the best *way* to use them. At first, trained typists were simply hunt-and-peckers who were familiar enough with the keyboard to proceed fairly rapidly using two, three or four fingers. A fast and efficient "touch typing" technique, using all ten fingers, didn't take hold until after a celebrated contest that was held in 1888. It pitted Frank McGurrin, a court stenographer in Salt Lake City, against a typing teacher in Cincinnati named Louis Taub. McGurrin had taught himself to use ten fingers and he was, by all accounts, sensational. Taub, a four-finger advocate, believed he was the fastest typist in the world. McGurrin, the challenger, used a Remington. Taub used a Caligraph, which had one keyboard for uppercase letters and another for lowercase letters. At their tense type-off in Cincinnati, McGurrin clobbered Taub, and from then on, according to historian Bruce Bliven, "it was clear that a good four-finger man didn't stand a chance against a good ten-finger man." It was also obvious that any aspiring speed typist had to memorize the keyboard, and that Caligraph's unwieldy double keyboard was doomed.

By the turn of the century, the number of American typewriter manufacturers had grown to more than 30. The Royal manual came along in 1906, but it didn't become the world's number one typewriter until after it appeared with the Magic Margin in 1939. In the late 1940s Royal increased its lead, and the manual's reputation as *the* indispensable office tool seemed secure.

Don't look now—here comes trouble

But guess what: the electric typewriter was already on the way. As early as 1855, an inventor named Giuseppe Devincenzi took out a patent in London for an electric writing machine. In 1902 George Blickensderfer, from Stamford, Connecticut, invented the first electric typewriter that was offered for sale worldwide. It was not until 1935, however, that International Business Machines Inc., after buying the Electromatic Typewriter Company and investing $1 million in product improvements, introduced an electric typewriter of its own. Nine years later, IBM installed at Harvard University an elaborate piece of equipment known as



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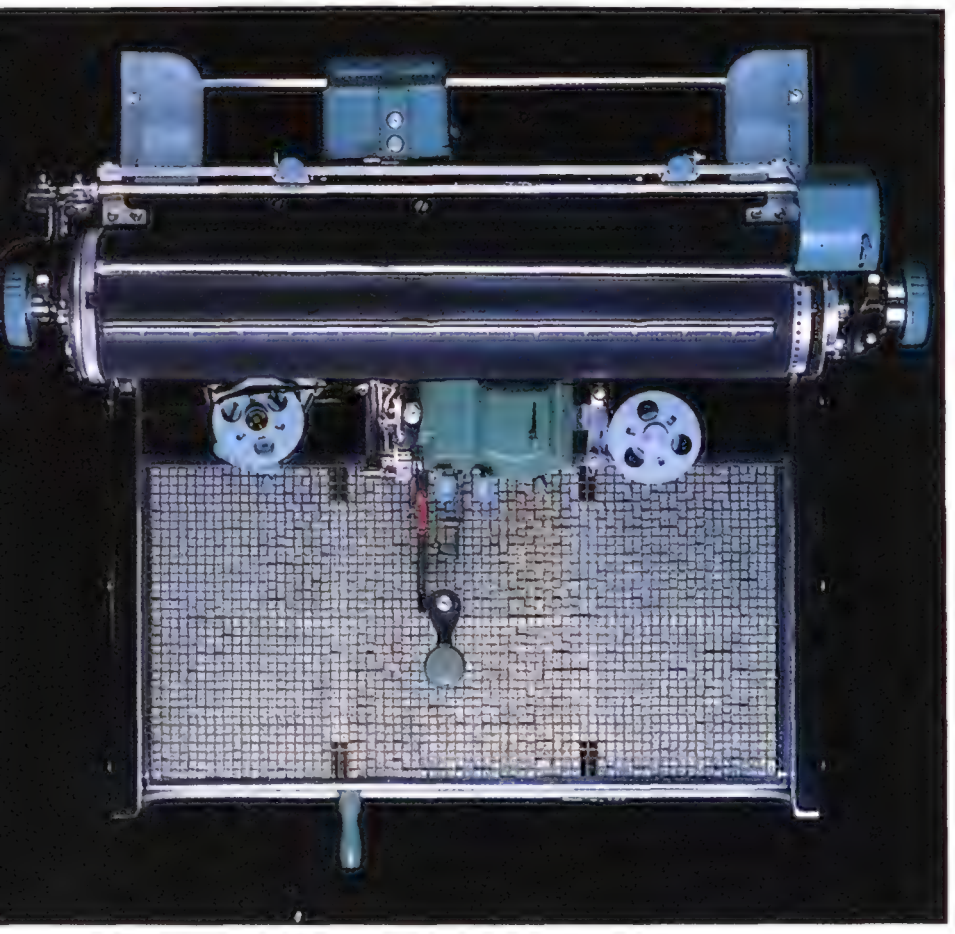
On the Alfred E. Beach typewriter for the blind, made in 1856, keyboard is standard but letters are raised.



Changeable type trays enable 1970s Chinese unit to print 6,800 characters. Movable arm selects "letters."

an "automatic sequence controlled calculator"—in a word, a computer. For the seemingly invincible manual typewriter, the handwriting was already on the wall.

But the replacement of one technology, the manual, by another technology, the electric typewriter, did not happen overnight. It took years. The electric began gaining the upper hand in the 1960s and '70s. Yet another conversion got under way in the '80s, to the electronic typewriter, which featured a number of advances beyond the electric, and then to the personal computer which, as every schoolchild knows, represents a quantum leap to a level of information processing that goes far beyond anything a mere typewriter can do. It also does away with a nasty little bit of business incumbent upon users of the manual and which humorist Robert Benchley called, with tongue only partly in cheek, "the biggest obstacle to professional writing." That, of course, is the need to change the ribbon.

Only a manual will do, Angela

Today only a handful of companies still make manuals. Olivetti produces two portables and one desktop model, and Olympia still makes a standard, in Mexico. For most Americans, the manual has become a symbol of times past. If, every Sunday evening, Angela Lansbury were caught on TV rattling off another mystery novel on a word-processing IBM clone, 90 percent of her audience would change channels.

But the manual has bequeathed to us more than mere nostalgia. It has also left the legacy of its keyboard—specifically, the venerable arrangement of letters, still featured on the most up-to-date information processors, known as QWERTY. And that arrangement is what one typewriter historian, Wilfrid A. Beeching, called "one of the biggest confidence tricks of all time." It seems that Sholes found that a keyboard with letters running alphabetically caused a lot of jamming of typebars. His brother-in-law, according to one version of the story, suggested that he rearrange the letters on the keyboard so that the most frequently used typebars came up from opposite sides of the type basket. Hence, QWERTY, which Sholes claimed was a "scientific" arrangement. Other systems were in use in those early days, but typing schools liked QWERTY and it became the unwrenchable standard, despite studies that suggested there were better ways to go.

QWERTY and various other inefficiencies notwithstanding, there are uncountable mossbacks who won't relinquish their laughable old fossils no matter what. Some of our most distinguished authors cling to their manuals—or what historian and former Librarian of Congress Daniel J. Boorstin, with a certain elfin loftiness, calls "human typewriters"—even to the exclusion of electrics. Boorstin's current book is being created

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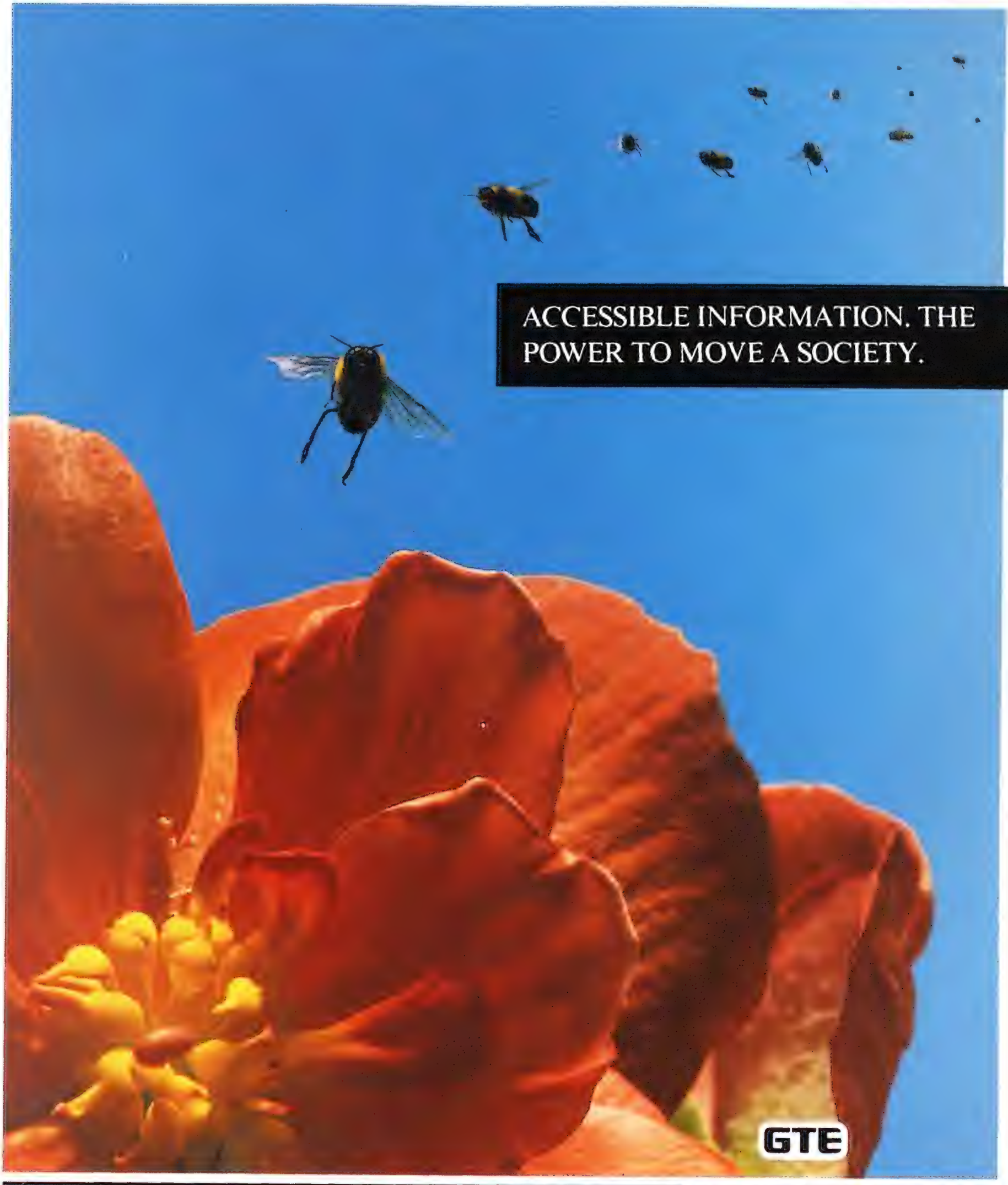
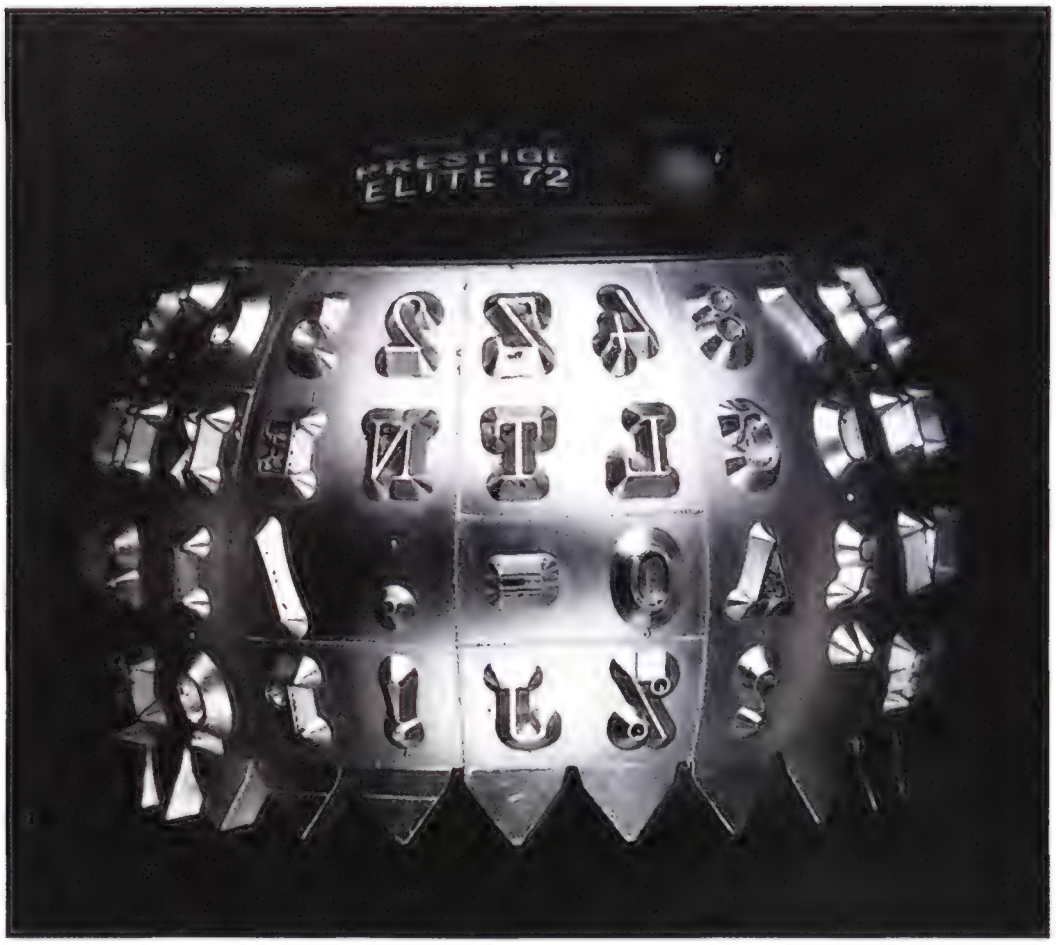


THE POWER IS ON

Produced in 1870s, Danish machine has keys like golf tees studded into a metal ball.



IBM's 1961 "golf ball" replaced typebars with single element, as did early Crandall.

in the study of his Washington, D.C. home on an Olympia standard upright. As a onetime director of the Smithsonian's National Museum of History and Technology (now called the Museum of American History), Boorstin is certainly not against modern technology. "I am simply at home with my Olympia," he says. So is Andy Rooney, the satiric correspondent on the CBS-TV news magazine *60 Minutes*. Or, to be more precise, Rooney is "at office" with his 1921 Underwood No. 5, for that is where he keeps it. He uses it mainly for letters and for writing down ideas. Rooney also has a collection of 25 other manuals.

Others take a moral stand in such matters. One such person is Wendell Berry, organic farmer, poet, neo-Luddite, who glares at our ecologically malevolent world from his organic farm in Kentucky (SMITHSONIAN, August 1980). He refuses to buy a computer because it would hook him yet more firmly to the local utility, meaning a direct dependence on strip-mined coal. "How could I write conscientiously against the rape of nature if I were, in the act of writing, implicated in the rape?" Berry writes with a pen, and his wife then types up his draft on a 1956 Royal standard.

Such antiquarianism is admirable, but it is only a matter of time before the manual typewriter becomes, if not extinct, at least further endangered. In that event, where will all of those unwanted machines go? Indeed, where have they gone already?

Todd Holmes, the curator of the National Office Equipment Historical Museum in Kansas City, Missouri, points out that during World War II vast numbers of older typewriters were gobbled up by the war effort in scrap metal drives. He believes a goodly number today wind up in the local dump (although on that point at least one landfill expert disagrees). Thomas Fitzgerald, the editor of "The Typewriter Exchange," a collectors' newsletter published in Philadelphia, points out that a lot of manual typewriters keep recirculating thanks to flea markets and yard sales. Repair people, he says, will pick up a 15-to-25-year-old manual for $5, fix it up and sell it for $40 or $50, which is a bargain. But repairmen, as noted, are few and far between, and typewriter collectors are not that common, either. (Fitzgerald's newsletter has a circulation here and abroad of some 150.) Typewriters are cheaper than antique cars, Fitzgerald says, and they do span a wonderful history from the beginning of the mechanical age to electronics, but they are cumbersome and they take up a lot of room. Which is why there aren't all that many people who collect them.

Once persuaded to try out the typewriter around the turn of the century, the federal government became a major user and a major disposer. Disposal of federal property is done according to the book, in this case the Government Services Administration's *Personal Property Utilization and Disposal Guide*, which also addresses such items as nuclear ordnance. Office equipment, including typewriters, that is not transferred or donated to government agencies is generally auctioned off.

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Introduced in 1969, handsome Olivetti manual is advertised as an objet d'art, not a business machine.

But what about all those other old manuals—the millions upon millions that clattered away in America's offices, homes, newspaper city rooms, and schools? The ones that didn't get auctioned off or thrown out or stashed away in attics, basements or closets? The ones writers aren't still writing on and repairmen aren't cannibalizing?

A few of them are in museums. The Smithsonian has about 230 in its collection, some of which appear with this article. Many are still being used, however. Some are kept at the ready by our armed forces for use in the field where there is no electricity. Many of the rest are overseas, or soon will be. Although the manual is obsolete here, there is a robust market for it elsewhere. "Manual typewriters are still in demand," says Thomas Zbikowski, who works for Youngberg and Associates, a used-typewriter broker in Cleveland, Ohio. "We sold 24,000 of them last year, mostly to Mexico and countries in South America and Southeast Asia."

The company has representatives who scour schools, businesses, office-equipment dealers and government auctions for used manuals. It buys up large lots of them whenever possible, but usually it gets only 25 to 30 at a time these days, unless it's buying overseas, in which case it sometimes picks up 500 to 1,000. It then sells them to exporters who ship them out. Any developing country is apt to be a potential customer, especially a country where electricity is expensive and human labor is cheap. "Manuals are much cheaper to purchase than the new hardware," says Paul Youngberg, who is president and owner of the firm, "and they tend to be less trouble. There are frequent power outages in many countries, or there may be no power at all in some schools and businesses."

Manuals are easier to maintain and repair than more modern equipment, too—another factor that makes them attractive in the developing countries. "You need a certain level of skill to repair electric and electronic equipment," Youngberg says. "There are new electronic typewriters you can buy now for only $100, but if something goes wrong with them, even minor things, you may not have anyone who knows how to fix them or can afford it. With a used manual, which costs much less, someone with very limited training can take care of it. This is why many countries are more excited about buying the manual."

It is instructive to consider the relative value overseas of a used electric typewriter compared with that of a used manual. In 1961, Youngberg says, IBM introduced its ball typewriter for $400. At that time the typical manual standard still sold for around $200. Today the used electric ball typewriter sells for around $25, and the good used manual standard, he says, is likely to go for twice that.

There's no way, according to Todd Holmes in Kansas City, to estimate just how many manual typewriters saw the light of day. There were at one time, he says, nearly a hundred outfits making them, some of which lasted for only a few years. Many simply died out, overwhelmed by larger competitors. And what of *them*? What of the great names of yesteryear? Remington sold off its typewriter business long ago, but still makes guns. Underwood vanished like so many others into corporate mergers, in this case with Olivetti. And Royal? The onetime grand leader in sales and innovation? Father of my two machines? It was bought by a German firm named Adler and existed for a while as Adler-Royal. Now it is gone, evaporated. As irretrievable as the mists in some dinosaurian swamp.

What can one say then? Nothing, perhaps, except support your repairman, indeed pray for him, and raise a glass to Christopher Sholes and his 50-odd predecessors. And to those few remaining examples of Remington, Hammond, Underwood, Oliver. Of Blickensderfer, Smith Premier, Woodstock. And Royal. To all of you, superannuated perhaps, a bit creaky, arthritic but still operable in a pinch, mostly in retirement now in garages, attics and basements, reminders of a nearly forgotten kind of craftsmanship, lifeless assemblages of parts that, for a time, came alive.

Seen upended here, ultramodern electronic machine for personal use looks more like an architectural model.

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National Museum of American Art

By Stephen May

An island garden, a poet's passion, a painter's muse

The American Impressionist Childe Hassam immortalized the beauty of poet Celia Thaxter's glorious garden and beloved Appledore Island

The artist works on rocky Appledore about 1886, soon after he fell in love with its wild, compelling vistas.

Depending on whether you are counting at high or low tide, there are eight or nine islands in the Isles of Shoals, a bleak cluster of rocks just off the Maine-New Hampshire coast. Swept by every wind that blows, and pounded by the mighty Atlantic, the islands are barren and desolate. Captain John Smith came upon them in 1614, and for a time the little heaps of granite bore his name. Later they served as important fishing and whaling stations, and generated tales of pirates, ghosts, shipwrecks and buried treasure. Around the middle of the past century, with the construction of a hotel, the largest island, Appledore, became a watering place for New England's elite, who formed a summer arts colony there.

The Isles are best known today as the site of one of America's most beloved gardens and for a series of paintings that immortalized it. This minute horticultural oasis, cultivated by writer Celia Thaxter, was celebrated a century ago in her charming classic *An Island Garden*, with famous oil and watercolor illustrations by Childe Hassam, America's most prominent Impressionist artist. In later seascapes Hassam captured on canvas and on paper the scintillating colors, ancient rocks and sparkling seas of the grand setting. Among the Isles of Shoals, America's champion of beauty for beauty's sake found the perfect outlet for his art.

But Celia Thaxter was there before him. She had grown up among the Isles, her childhood marked by isolation, adventure and discovery. A woman of extraordinary courage and talent, an attractive and charismatic figure, she formed friendships with intellectuals, stimulated the creative energies of island guests, and earned literary and horticultural acclaim.

As for the energetic and outgoing Hassam, fortune seemed to shine on him from the start. Determined to be a painter of beautiful scenes, he succeeded so well that few American artists have been as highly respected, critically acclaimed and publicly successful during their lifetime. Absorbing the influences of Turner, Whistler and Monet into his own intuitive, pragmatic approach, Hassam's exuberant brand of Impressionism opened windows of fresh air and sunlight, reflecting a colorful and cheerful view of American life.

Working in oils, watercolors and pastels, Hassam depicted everything from Parisian streets to Manhattan cityscapes to the Long Island countryside, but he did some of his finest work around Celia Thaxter's little flower beds on craggy Appledore Island.

This interesting and productive literary-artistic partnership and the picturesque setting in which it flourished are the subject of an exhibition, "Childe Hassam: An Island Garden Revisited," on view at Smithsonian's National Museum of American Art through January 6, 1991. The show was organized by Helen A. Cooper, curator of American painting and sculpture at the

Hassam's radiant watercolor *The Garden in Its Glory* was painted for Thaxter's book *An Island Garden.*

Yale University Art Gallery, and David Park Curry, now deputy director of collections at the Virginia Museum of Fine Arts. The exhibition of 40 oils, watercolors and pastels is complemented by Curry's thoughtful and thorough accompanying book, and supported by a grant from the IBM Corporation.

The daughter of lighthouse keeper Thomas Laighton, Celia spent her childhood on White Island, a high promontory of bare granite bravely facing into the Atlantic, which has been described as "meeting the storm waves of the open ocean like a giant fist." As a little girl she roamed over ridges and gorges, raced with sandpipers, explored for sea treasures in pools, and braved wind and spray, becoming as wild and free as a gull. From the age of 4 until she married at 16, Celia rarely left the Isles; the rocky outcroppings and a few lessons and books provided by her parents and later a tutor made up the major part of her education.

Because White Island's inhospitable terrain only grudgingly yielded to patches of vegetation, Celia came to appreciate anything that grew. "A lonely child, living on the lighthouse island ten miles away from the mainland, every blade of grass that sprang out of the ground, every humblest weed, was precious in my sight," she wrote. Inspired by occasional wildflowers that glowed like masses of jewels among the rocks, she began a "scrap of a garden" when she was only 5.

In 1848, Celia's father built a hotel, Appledore House, and the family moved to the larger island. Rugged is the word for Appledore Island, 90 acres in size and one mile in length. Its rocky topography is riven with crevices and sharp-edged valleys and everywhere, granite elevations and headlands. To 12-year-old Celia, who came to know its every cave and gorge, this potentially foreboding place opened up a whole new world of discovery and enchantment.

She blossomed into a poised beauty, and midway through her teens married Levi Lincoln Thaxter, 11 years her senior, who was a family friend, her tutor and a partner in her father's hotel. Levi, a shy, bearded dreamer with degrees from Harvard, came from a prominent, well-connected New England family. He never really found an occupation to suit his tastes, although late in life he achieved success giving public readings of the works of Robert Browning.

Because Levi had no consistent means of earning a

Mr. and Mrs. Arthur G. Altschul

In *The Room of Flowers*, 1894, Hassam gives us an intimate look at the airy, flower-filled parlor of Celia Thaxter's cottage on Appledore. The informal salon that the poet held there drew a talented group of artists, writers and musicians to the Maine isle.

living, the newlyweds at first occupied a series of temporary residences around Boston, often relying on his family for funds. Summers were spent on Appledore, where Celia helped with the family hotel. The couple had three sons, the eldest of whom apparently suffered some injury at birth and required special attention from Celia. Throughout her life she strove to protect him from a world of people "who do not understand."

Through Levi, Celia met leading literary figures of the day, including Charles Dickens, upon whom she made a great impression when he was in Boston on a lecture tour. One dinner party at the home of Celia's great friends James T. Fields, editor of the *Atlantic Monthly*, and his wife, Annie, included the Thaxters, Dickens, poet Henry Wadsworth Longfellow, writers Ralph Waldo Emerson and Oliver Wendell Holmes, and artist William Morris Hunt. The lighthouse keeper's daughter comfortably held her own in this distinguished company, much to the pleasure of her husband and onetime teacher.

With the help of these connections, Celia began to have her much-admired poems about flowers, the sea and the islands published in the *Atlantic Monthly* and other well-known periodicals. Her verses seem sadly outdated nowadays, but her prose, such as *Among the Isles of Shoals* of 1873, a paean to the trials and joys of island living, has a timeless quality that makes delightful reading today.

But Celia's life had changed dramatically in 1855, just four years after her marriage, when Levi almost drowned on the way to Appledore during a violent storm. He vowed never to return to the island, and rarely did. Thus began a series of separations from his wife, who continued to spend most summers and some winters with her beloved parents and brothers on the island that gave her inspiration. To make ends meet within the bounds of contemporary propriety, Celia worked as a writer, illustrator, china painter and hostess at the hotel.

Meanwhile, Appledore House, America's first major offshore resort hotel, prospered. Advertised as an "ideal summer resort of the Highest Class," 60 miles from Boston, it offered fresh air, peace and quiet. "No noise. No dust. No trolleys," the ads proclaimed. A grand rambling wooden structure featuring long, wide piazzas with large wooden rocking chairs, the hotel looked out on well-kempt lawns, tennis courts and the blue sea. Guests always dressed for sumptuous dinners, to which they were summoned by a band playing Gilbert and Sullivan tunes. At its height, the inn could house several hundred guests.

Stephen May, a former local, state and federal official, lives in Washington, D.C. and summers in Maine, a convenient location for visits to Appledore Island.

Mr. and Mrs. Hugh Halff jr.

Appledore, August, 1900 is one of Hassam's most deliberate depictions of tourist life at the Shoals.

But Appledore's brightest attraction was Celia herself, and the cultural salon over which she presided. The East Coast literati had discovered Appledore House soon after it opened. After a visit in 1852 Nathaniel Hawthorne called Celia, then only 17, the "very pretty little Miranda." Poet John Greenleaf Whittier, a frequent visitor and special friend of Celia's, later mused about what Appledore would be like without her: "a mere pile of rocks, I imagine, dead as the moon's old volcanic mountains. Thee have given them an atmosphere." That atmosphere, warmed by the hostess' charm and augmented by her growing literary reputation, drew a talented group of artists, writers and musicians to the flower-filled parlor of her cottage adjacent to the hotel. Only the privileged few were invited to join the morning and evening salons in Mrs. Thaxter's famous sanctuary.

The long, airy parlor was crammed from floor to ceiling with an incredible jumble of framed works of art, photographs, statuary, bookcases, sofas and a piano. There were freshly cut flowers everywhere, on tables, mantels and windowsills, an "indescribable wealth of color," one observer reported. It was, exclaimed another, "like living in a rainbow."

Sharing in this magical setting, in addition to

National Museum of American Art

Emerson, James and Annie Fields, and Whittier, were such literary titans as James Russell Lowell, William Dean Howells, Sarah Orne Jewett, James Whitcomb Riley, Harriet Beecher Stowe and Mark Twain. Talented musicians such as Harvard's John Knowles Paine performed and set Celia's verses to music. Actor Edwin Booth was a frequent guest. Artists in attendance included J. Appleton Brown, William Morris Hunt, William Trost Richards and the promising Childe Hassam. In the crowded room the literati read from their own works and the writings of others, animated discussions ranged from world events to art, musicians played, and sing-alongs rang out as darkness enveloped the island.

A spunky and down-to-earth hostess as well as esthetic beacon, Celia had the uncanny ability to encourage her gifted visitors to do their best work. A striking presence and prime example of Victorian womanhood, she often presided over the festive gatherings while busily painting china at her desk in a corner. At the age of 36, Celia was described by writer C. T. Young as "the most beautiful woman I ever saw, not the most splendid nor the most regular in feature, but the most graceful, the most easy, the most complete." Celia was very much aware of her good looks, and her fine carriage and white hair in later years enhanced her dramatic appearance.

In the Garden, at far left, catches Celia Thaxter amid the vibrant colors of her garden. Painted in oil, it was the frontispiece for *An Island Garden*. Photograph at left mimics Hassam's vantage point and shows the restored garden as it looks today, luxuriant in its color and beauty. Pictured above, in 1887, about five years before the painting at far left was done, is the remarkable Celia, known as the Rose of the Isles.

One of her favorite artists, Frederick Childe Hassam was born in Dorchester, then a prosperous suburb of Boston, of old English Puritan stock. The family name was a New England variant of Horsham. His father, a moderately successful businessman, had a large collection of art and antiques, which first stirred his young son to produce little drawings and watercolors. Blessed with good looks, and talent, young Hassam excelled in boxing and swimming at Dorchester High School, where his courses included Greek, Latin, French and German. But he decided to leave high school after two years, passing up his uncle's offer of a Harvard education to go to work. He learned the art of wood engraving, and by the time he was 20 his illustrations were appearing in such leading publications as *Harper's* and *Scribner's*. While studying art at night he began to turn out well-received watercolors. But determined to become a serious painter in oils as well, in 1883 he went on a European tour. In Venice and elsewhere on the Continent he responded to the art of J.M.W. Turner, the great English landscapist and watercolorist. Thereafter, Hassam's work often reflected his admiration for Turner's abstract, exalted color and masterful rendering of atmosphere.

Upon his return to Boston, the young artist married Kathleen Maude Doane—the beginning of a long and

This view is from end of garden, looking toward Babb's Rock, a scene Hassam painted many times (opposite).

happy union—and opened a studio. There he produced somber tonalist canvases of rainy Boston streets and snowy Boston Common.

Accompanied by his wife, Hassam returned to Paris for further study in 1886. Gradually abandoning the tight brushwork and muted palette of Boston, by 1887 his technique became looser and he embraced the higher-toned palette of Impressionism.

The City of Light had converted him to a hybrid form of Impressionism, a sort of compromise between the careful drawing he learned at the Académie Julian and the prismatic dissolution of the French master Claude Monet. Late in life Hassam vehemently denied any influence by Monet, stressing that he never met him nor visited Giverny, and emphasizing the importance of British artists such as John Constable and Turner to his own development as well as to the development of French Impressionism. But Hassam, a great gallery-goer, had many opportunities to examine Monet's works. As veteran art critic Royall Cortissoz aptly put it, "He saw the wisdom in Monet's impressionism. But these things opened his eyes rather than governed his brush."

For the remainder of his career, Hassam tended to work in the manner best suited to his purpose and interpretation. As the occasion demanded, his brushwork could be precise and deliberate, or vigorous and robust, but his palette was consistently light, filled with a sense of sunshine and fresh air. In effect, his Impressionism meshed the bright colors and interest in light of his French compatriots with a commitment to his American realist roots.

Although his new paintings drew rave reviews when he returned to Boston, Hassam and his wife had already decided to take up residence in New York, a magnet for artists of the day, filled with Paris-like scenes to be painted. The gregarious Hassam reveled in Manhattan's active social and artistic life, into which he plunged with characteristic gusto.

Hassam's colorful and animated canvases of wet sidewalks on Fifth Avenue, the pale harmony of spring hues in Union Square and the stately promenade under the Washington Square Arch suggest his devotion to the urban scene in which he settled permanently in 1889. For Hassam, New York was never a place of tenements teeming with immigrants and social reformers bent on exposing and improving the lot of the underprivileged, but a spectacle of color and atmosphere. At a time of growing social unrest, no ash cans marred Hassam's vision of his role.

Once established as a successful artist, Hassam maintained an annual schedule of summers in the country. Having known Celia Thaxter earlier in Boston, where she was briefly his student in a watercolor class, it seemed natural for Hassam and his wife to gravitate to her family's hotel, starting in the mid-1880s. Appledore, with its relaxed seaside atmosphere and cultivated, upper-crust summer crowd, fit his lifestyle—and his art—like a glove. Over the course of three decades, until 1916, Hassam spent at least part of most summers among the Appledore literati.

Celia became the young artist's devoted friend, muse and mentor, spurring his ambition and predicting, in exalted sonnets, his future greatness. At her suggestion he dropped Frederick in favor of the more exotic Childe as his first name.

Perhaps Celia's greatest gift to Hassam was the opulent, informal garden she cultivated on the terrace that sloped from the porch of her cottage toward the sea. This fenced, 50-by-15-foot plot of hollyhocks, poppies, larkspur, crimson phlox and an astounding number of other plants—"old-fashioned flowers our grandmothers loved," Celia said—grew in carefully nurtured, wild disorder. The renowned garden—"a most breathtaking

Collection of Mr. and Mrs. Raymond J. Horowitz

Poppies, 1891, contrasts the temporal and enduring aspects of nature. Time and again in the 1890s, Hassam set the evanescent poppies of Celia's garden against Appledore's rugged landscape of rocks and open sea.

riot of color," in Celia's words—flourished in stark contrast to the harsh, granite island.

Maintaining this small oasis was a daunting, daily challenge. Celia rose at 5 in the morning to tend it, weeding, planting, fending off its "legions of enemies," and snipping blooms to grace her parlor.

At the urging of friends, Celia distilled a lifetime of practical gardening experience in *An Island Garden*, in which she described in loving detail the strategies, individual plants, challenges and rewards involved in making her horticultural miracle bloom. Her very personal kinship with growing things is manifest on every page: "flowers have been like dear friends to me," she wrote, "comforters, inspirers, powers to uplift and to cheer." Her delightful recounting of her all-out war against slugs contains both chuckles and sage advice for contemporary gardeners. Celia's evocations of the joys—and frustrations—a garden brings set a standard for American garden writing that has never been surpassed. (Published just before her death in 1894, *An Island Garden*, complete with Hassam's original illustrations, was reissued by Houghton Mifflin in a handsome facsimile edition in 1988.)

Inspired by Celia's cultural salon, her garden's brilliant hues and the island's wild beauty, Hassam proceeded to record the scene in a dazzling series of oils, watercolors and pastels. About 10 percent of his vast oeuvre of nearly 4,000 works depict the Isles of Shoals. Influenced by his recent Parisian experiences, his early Appledore creations have a lush, bold and gregarious French feel, while retaining American roots. Full of vitality and sparkle, overflowing with

light and an island atmosphere, they suggest the joy the artist must have felt in that stimulating setting.

Hassam translated the popular Impressionist subject of the lone woman in a garden, aglow in sunlight, lost in quiet meditation, with memorable effect in *In the Garden* of 1892. Silhouetted against blue ocean and sky, silver-haired Celia in a striking white dress stands surrounded by her colorful, random blooms.

Much of Hassam's early work on Appledore, created in response to Celia's invitation to illustrate her book, was in watercolor. It proved a particularly effective medium for capturing the evanescent beauty of his friend's flower beds. In vivid explosions of color, her blooms blaze among green foliage set against the white rocks and blue skies of the New England summer. These are among the finest watercolors in all American art.

In *The Garden in Its Glory* (p. 68) Hassam achieved rich colors of unusual brilliance in watercolor, beyond the more mellow tones often found in his island oils. Encircled by vibrant greens, reds and yellows, Celia and a grandchild emerge from the door of her cottage onto the vine-wreathed veranda. They are headed no doubt for her cherished plot. It is an indelible image of the woman with the green thumb ringed by the glorious fruits of her labor.

Hassam's fondness for Celia and his enjoyment of her parlor fused in *The Room of Flowers*, 1894 (p. 70). The painting stands as a poignant memorial to Celia, who died soon after its completion. Applying his oils with vigor, and bathing the room in warm sunlight, Hassam captured the jumbled, eclectic, flower-filled environment in such a way that the reclining figure, perhaps a younger version of Celia, is almost lost in the clutter.

The strain of balancing the demands of her family, her hotel responsibilities, holding court in her salon, writing poems and prose, painting china items, and continually traveling back and forth to the mainland took its toll on Celia as she reached her 50s. She often drove herself to exhaustion, and in her last years she was plagued by severe pain, which yielded only to injections of morphine. Her doctor ordered rest during winters on the mainland, but come spring she found strength in the annual ritual of renewing her island garden. Each year her hard work was rewarded.

Gerald Peters Gallery, Santa Fe

Painted in 1903, this vivid watercolor, *Fourmaster Schooner*, captures the sweep and mood, the fiery color of a sunset as seen from Appledore. Sights like this helped make the island a favorite New England retreat.

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Hassam and friends explore Appledore's famous rocks, c. 1905. The artist gloried in island's granite terrain.

An Island Garden was enthusiastically received in 1894. That summer, as if with dim foreboding, Celia revisited her childhood haunts among the Isles. She died peacefully in August. Hassam, family members and friends gathered masses of flowers to adorn the parlor where Celia lay, and then carried her for burial to the nearby family plot. The party returned to her parlor for two hours of the music she loved. "It was," remarked Annie Fields, "a Poet's burial!"

Not long after Celia's death her garden gradually disappeared. The hotel and her cottage were destroyed by fire in 1914, and the deserted island became overrun with scrubby vegetation and sea gulls. During World War II it became a submarine observation post, and a U.S. Army barracks was erected on the site of the garden. In the late 1970s, however, Dr. John Kingsbury, director of the Shoals Marine Laboratory on Appledore, run by Cornell University and the University of New Hampshire, reconstructed the garden using plans from *An Island Garden*. It is maintained by garden club volunteers from the mainland, led by Virginia Chisholm, a lady with a will as indomitable as Celia's and a thumb nearly as green. "We've tried to plant everything Celia had," she observes, "but it isn't as rampant and her flowers were much taller then."

Deeply moved by the passing of his friend, Hassam stayed away from Appledore for several years. He traveled to Cuba and Europe, where, seemingly reenergized, he produced a group of sparkling, colorful paintings, confidently capturing the ambience of Rome's Spanish Steps and the Tuileries in Paris.

During this period he led a revolt against the New York art establishment, teaming with John Twachtman and J. Alden Weir to form the Ten, a group of American painters loosely identified as Impressionists, who mounted their own smaller, successful shows for two decades. An advocate of American art, Hassam frequently lashed out at critics, collectors and "incompetent" museum directors who persisted in assuming European art was superior to American works. "We have an art! Let us respect it!" he proclaimed.

When Hassam returned to Appledore around the turn of the century, he devoted his attention to the island itself and the surrounding Atlantic. He gave intense study to the compelling confrontation between ancient rocks and relentless seas, but chose not to explore directly the clash of these powerful forces and the dangers inherent in them. Typically, Hassam found beauty and color, rather than conflict and disaster, in nature. Although he worked in both watercolor and oil, the latter seemed better suited to the unpopulated, introspective seascapes on which he now focused.

Hassam last visited the island in 1916. Still ahead was distinguished work: completion of the lush, decorative "New York Window" paintings, the patriotic "Flag Series" during World War I, and skillful work in etching and lithography.

A revered figure in American art

More and more Hassam and his wife visited congenial summer haunts like Cos Cob and Old Lyme, Connecticut, where he shared the camaraderie of Florence Griswold's artistic coterie (SMITHSONIAN, January 1982), and Gloucester, Massachusetts. Finally, in 1920, he settled on picturesque East Hampton as his permanent summer residence, happily producing there decorative, colorful canvases of the Long Island scene.

By now a revered figure in American art, Hassam refused to rest on his laurels. Well into his 70s he worked with vigor and ability in a variety of media, begrudging ceremonial functions and other distractions that took time from his work. The joy of creating beautiful works of art remained to the end. He regu-

larly submitted a new painting or two to major annual exhibitions, but the prizes to which he had become accustomed rarely came his way. While he snorted at the term "modernism," saying "there is no such thing as modern art, there is only good art," the art world had in fact passed him by.

Increasingly repelled by the frenetic pace of city living, he and Maude gloried in the final summers in East Hampton, often extending their stays well into autumn. In October 1934, after enjoying a walk and drive to view the fall foliage, he quietly celebrated his 75th birthday in his comfortable home on Egypt Lane. Only a week or so earlier he had been one of the last swimmers in the local waters. That winter Hassam fell ill in New York and was unable to do much work. Still bedridden when spring arrived, he traveled to East Hampton by ambulance. While his spirits must have improved in the country air, his health did not. Death came in August 1935.

In his will Hassam asked the American Academy of Arts and Letters to sell the more than 400 oils, watercolors and pastels remaining in his studio, and use the proceeds to purchase works by American artists for presentation to American art museums. It was his culminating expression of confidence in the future of American art. That and his paintings.

The confrontation of ancient rocks and relentless seas fascinated Hassam, and seascapes dominated his work at the Shoals from 1899. In *The South Ledges, Appledore*, 1913, color links the figure with landscape.

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To Mr. President–simple gifts of, by and from the people

As the extensive collections of former Chief Executives attest, our leader is first in the hearts, and creative thoughts, of his countrymen

All of us have gotten them—presents that have no real use and that we would not choose for ourselves, tokens of appreciation that give full meaning to the cliché "It's the thought that counts." And no American seems in a better position to receive such objects, or is more obliged to do so, than the President. Few other citizens receive as large or consistent a volume of heartfelt mementos as the Chief Executive.

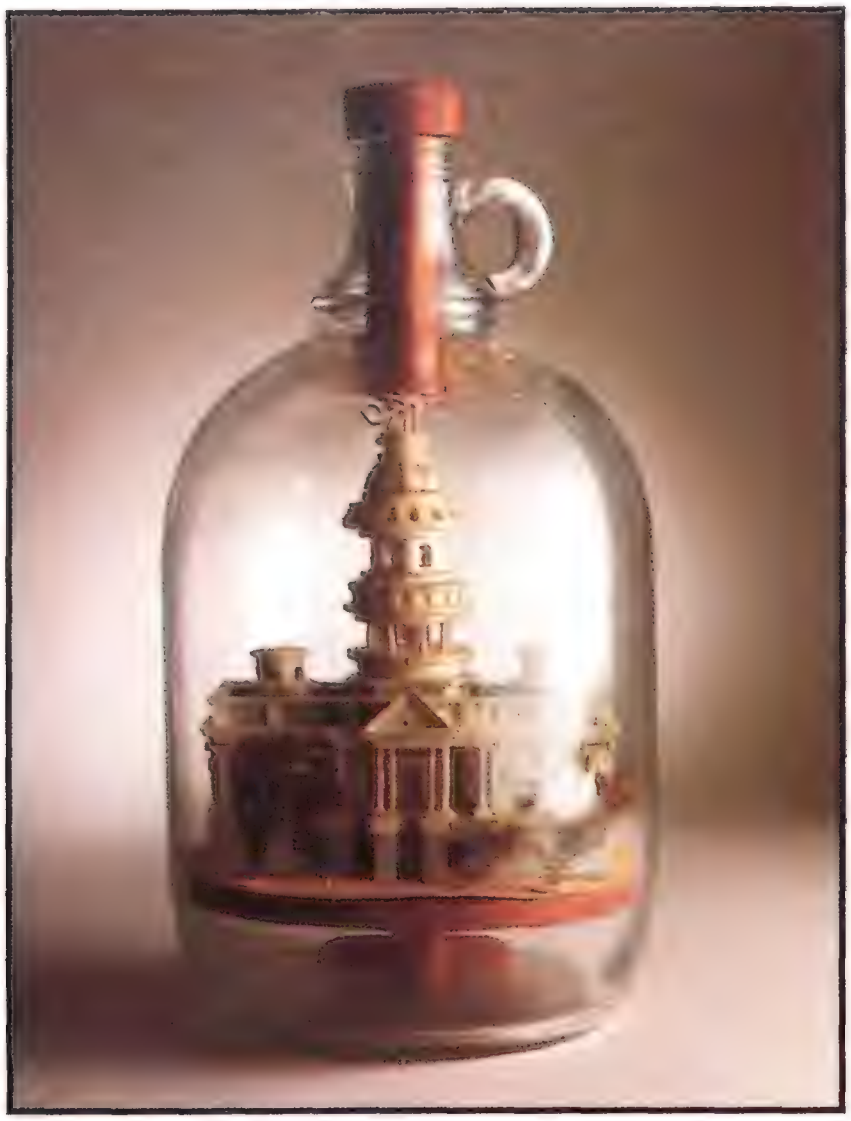
Being the focus of such generosity has a major drawback, however: Where does one store the bounty? Franklin D. Roosevelt solved that problem nearly 50 years ago by creating his own Presidential library (SMITHSONIAN, December 1989). FDR's innovation is now tradition. Every President since has founded an institution to house his personal trove of historical documents and museum pieces.

In general, Presidential gifts fall into two categories: gifts of state from foreign leaders and diplomats, given to the American public via the President, and domestic gifts. At one time, gifts of state were studies in opulence. But in the past 30 years Presidents have been restricted in what they can accept, and the value of such offerings has been reduced by orders of magnitude. Domestic presents have also stretched the limits of monetary value, as well as of taste. Dwight Eisenhower was sent the original working proof for a Rembrandt etching. From the "on the fringe of good taste" category: the World War II commemorative, chrome-plated Colt .45 replica with silver bullets, presented to Richard Nixon by Elvis Presley.

More humble, and in a way more interesting, are gifts from the hearts of America—handmade items not intended to impress, cajole or make a deal. These gifts, often crafted through hours of painstaking work, remind the President that he is in the thoughts of their makers. They are gifts sent with affection: quilts; caricatures; flags made from almost any material; religious objects; pictures and constructions created with shells, seeds, buttons; carved wooden figures; American eagles and Presidential Seals that have been crocheted, embroidered, cut, pasted, painted. All Presidential libraries hold thousands of folk items. "An orgy of Americana," said one reporter referring to Nixon's

Lyndon Johnson was a sharpshootin' sheriff (opposite) in the eyes of a Canadian artist who caricatured him in fiberglass. A Florida man saw him differently and had Representative Claude Pepper, champion of the elderly, deliver a four-foot thank-you to LBJ in 1967.

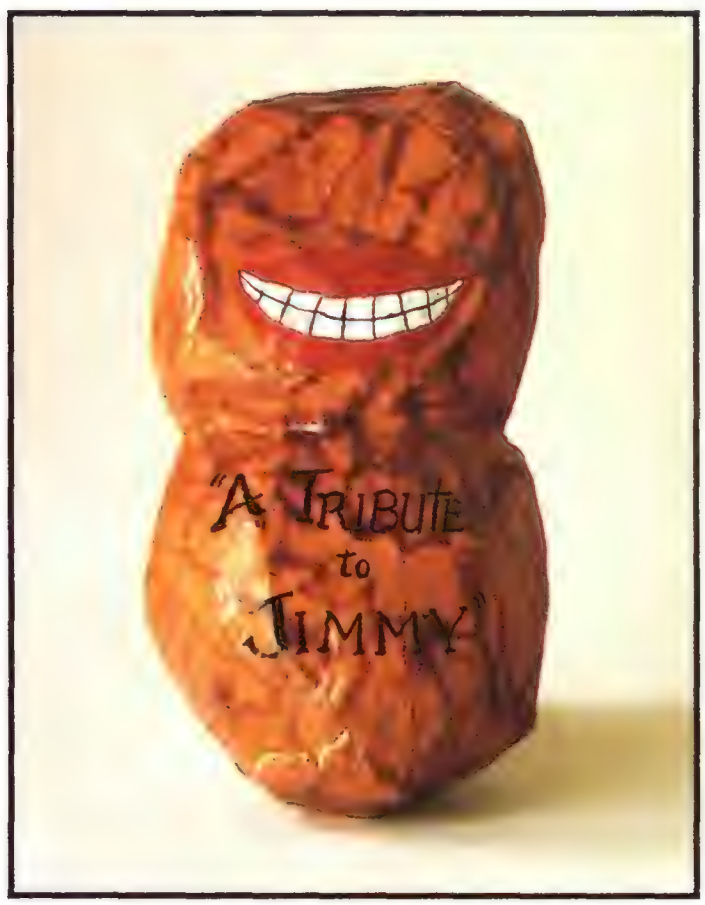
Photographs by Henry Groskinsky



U.S. Capitol in a bottle was "Presented to President Franklin D. Roosevelt/ Made July 1942 by Max Krimsky NY," according to note stuffed alongside the stopper.

Golf ball, light bulb, odds and ends, were combined into quirky 1950s figures that likely depict Ike and two of his best-known traits: love of golf and lack of hair.

"Ike" Isenhour of North Carolina liked to make walking sticks for friends. He carved one for Jimmy Carter, complete with peanut in handle, from a dogwood sapling he found.



A papier-mâché peanut baring its pearly whites the Carter way is "A Tribute to Jimmy" from four New York eighth-graders.

Pull-tabs from beverage cans were used by a resourceful Cub Scout, who made this Bicentennial eagle for Gerald Ford.

Although they appear perfect, appliquéd Western boots sent to Ike contain a major mistake: eagle should actually hold arrows in its left talons, so that it faces olive branches held in its right.

Bespectacled FDR grins from the front of a wooden pipe, while his wife, Eleanor, stares at the smoker from the back. Curators know nothing about its origins.

His-and-her plates, intended as a cheery wake-up for Richard Nixon and his wife, Pat, were a present from Dallas, Texas, couple distantly related to the President.

Clutching a miniature of his party's mascot, a portly Gerald Ford, made of painted rocks, would do more than stop doors: he weighs in at nearly 70 pounds.

Carved from a single clump of tree roots, this lamp base was intended to represent Ike as a five-star general astride a storming Republican bull elephant.

In 1943, Ohio dentist Bernie Cooper sent FDR a pair of six-inch busts made from found metal parts. One portrayed FDR (above); the other, Winston Churchill.

Portrait of John F. Kennedy, made from dyed eggshells, arrived in Inaugural year. After his assassination, many people sent likenesses to express their grief.

collection. The sentiment applies as well to the collections in the other Presidential libraries.

Each grouping of Presidential gifts could serve as a time capsule for its particular era. "Usually any event that occurred during a Presidency will end up in the collection," says Walton Owen, a National Archives museum curator working on the Nixon materials. "The collection is a mirror of the times, not only politically, but culturally and socially as well." Such reflections of society can be seen among the Nixon objects, which range from bracelets with the names of soldiers missing in action to beer-can furniture and decoupage items. Events of Nixon's Presidency are marked by dolls depicting him meeting Mao Tse-tung, and gifts commemorating the lunar landing and the end of the Vietnam War. Gerald Ford "got practically everything you can imagine in red, white and blue," says Jim Kratsas, deputy director and curator of the Gerald R. Ford Library and Museum in Grand Rapids, Michigan. "We have one of the best Bicentennial collections around," he adds—including a Declaration of Independence written in alphabet noodles.

Thirty years before the Bicentennial, FDR received an intricate clock case, without works, constructed of pieces cut from wooden produce crates. Its maker said the gift was in appreciation for what Roosevelt's New Deal had done for her impoverished family. More moving yet are the hundreds of portraits and busts of JFK that poured in after his assassination. Some of the works are masterfully executed, others are barely recognizable as the young President. "An artist may have worked on a bust for years," says Dave Powers, museum curator at the John F. Kennedy Library in Boston. "And even though it doesn't look like the President, we keep it because it was a labor of love."

The Presidential libraries hold many other such labors of love. Jimmy Carter has been immortalized in a carved wooden nutcracker (putting his square jaw to work on something harder than peanuts) and in a crude, half-painted wooden bust given by an arthritic man who lost his ability to do fine-detail work and thus had to execute the sculpture with a chain saw. A woman sent Ike a triptych comprising newspaper photographs of her three favorite people—Ike, his wife, Mamie, and singer Johnny Cash—all framed by a chain of folded cigarette packs. Nixon received separate portraits of himself and his wife, Pat, painted on two grains of rice. (The Nixon, Carter and Eisenhower libraries each have a rice grain with the entire Lord's Prayer written on it.) He was also sent two rocks, one from Senator Barry Goldwater, that the donors thought closely resembled Nixon.

Surely President George Bush waits with baited breath to discover the myriad ways Americans create expressions of their affection—in pork rinds.

W. Eric Keller

JFK Library has more than 200 busts of late President. While some of the commercially made ones are duplicates, and others barely resemble him, they all are kept.

One of the standouts in FDR's collection is this penciled double portrait, surrounded by intricate eagle, Saturn, festoons—crafted from countless colored-pencil shavings.

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M A C H I N E

J A G U A R

By Michael Parfit

Weaving mysteries that tell of life among the Navajos

Tony Hillerman's tales span the vast reservation spread across three states in the Southwest; and his heroes are a pair of tribal policemen

Mystery writer Tony Hillerman sets his stories in landscapes like this one, at Monument Valley, Arizona.

Ronald Horseherder pulled down the neck of his Colorado State University sweatshirt. The scars made by skewers at the Sun Dance shone on his chest: tufts of ruined flesh, blossoms of violence, pain and honor. He let the shirt slip back up and hide them. His eyes were dark and hot, set deep under a cap that said "New Orleans Saints." "I will dance again this summer," he said, with heat. Horseherder is 18 years old.

Tony Hillerman watched him. Hillerman is 65. He is not a Navajo, though some people who read what he writes think he is. He is a white man, a *biligaana.* He once called himself "a broken-down old fat man," one of his few inaccurate descriptions. He is not particularly old; he is not at all broken down.

Hillerman stood with Horseherder on the Sun Dance ground at Big Mountain on the western Navajo reservation in Arizona. Colored rags hung in a dead cottonwood tree, Sun Dance offerings left from last year. Six sweat lodges made humps on the ground, like a herd of huge turtles, sleeping. Farther away was a hogan made of juniper poles chinked with mud, and a heap of Black Mesa coal. Dry wind danced with the dust on the plains below the mountain and made the rags flutter in the cottonwood tree.

"I sit down with my grandmother and say 'Teach me something,'" Ronald Horseherder said. "I want to know who I am and where I come from."

Horseherder was an angry young man; when the old chiefs used to sit around in their parlays with the U.S. Cavalry and say "We won't be able to control our young men," it was young men like Horseherder they were talking about. Horseherder had once said to a Senator: "We will meet again, you and I, and next time *you* will lose."

But to Horseherder this large, genial *biligaana* was different. They seemed to share an understanding. Perhaps it was because Tony Hillerman, a white man who has become an integral part of the Navajo Nation's enigmatic world, knew where Horseherder was coming from because he had come the same way.

Tony Hillerman is a mystery writer. He engages in

But for Hillerman, landscapes include people as well as places, and the people he writes about are Navajos.

the precise, intellectual and very British profession of posing intricate problems about murder, presented and solved satisfyingly in 80,000 words. He has published 16 books, 11 of them mystery novels, won the coveted Edgar Allan Poe award from the Mystery Writers of America, served as president of that organization, and had his work on the *New York Times* best-seller list three times in the past four years.

But the life in Tony Hillerman's books is the people, landscape, cultures and religions of the dry, wild, 25,000 square miles of desert in and around the Navajo reservation of New Mexico, Arizona and Utah. In the landscape of his fiction, white people read Zane Grey instead of Agatha Christie, and Indians read legal briefs or tracks in the sand. The form of expression he has chosen is stranger than sorcery here, but within his spare prose Hillerman has caught the nature of both the land and its people so richly that the Navajos have honored him as "special friend" to the *Dineh*, the Navajo people.

Tony Hillerman's books are like windows that look out into *Dinetah*, the holy Navajo landscape. "A first-

Photographs by Terrence Moore

Laundromat is typical meeting place for Navajos who live in far-flung hogans on reservation landscape.

rate story of suspense and mystery . . . wholly and inseparably intertwined with the culture of the Navajo nation," a *New Yorker* reviewer wrote about *The Ghostway*, published in 1984. The stories are rich in detail: ". . . the yellow of the cottonwood along the dry streambed glittered in the sun. They were the only trees in a tan-gray-silver universe of grass." But the nature of the place is not just backdrop; the cultures and religions of Navajos, and occasionally, other tribes, are central to the plots. In *The Ghostway* a vital clue is hidden in the traditional preparation of a Navajo corpse for burial. *A Thief of Time* is about the illegal hunting of bones and potsherds in Southwest ruins, and about the efforts of anthropologists to trace the history of the vanished Anasazi civilization. Hillerman's most recent book, *Coyote Waits*, takes its title and theme from the Navajo legend of Coyote, who mixes playfulness and evil, and is always poised to prey upon the careless.

Hillerman never points at the Indian way of life as if it were strange. A Hillerman hero is not a visitor—say, a Los Angeles private eye who pursues a criminal to the Southwest and finds himself confronted by customs he thinks bizarre. His main characters are two Navajo cops: Joe Leaphorn, a detective who studied anthropology at Arizona State University; and Jim Chee, a younger patrolman who also studied anthropology and who is now learning from his uncle how to become a Navajo medicine man.

Through Chee and Leaphorn, Hillerman describes the Navajo landscape and religion the way Agatha Christie (SMITHSONIAN, September 1990) would write about the English countryside or the Episcopal Church—as a natural part of the environment. The reader lives not as a spectator but as a vicarious participant, so wholly wrapped up in everyday patterns of Navajo existence that sometimes it seems the most bizarre customs are those practiced by *biligaana*.

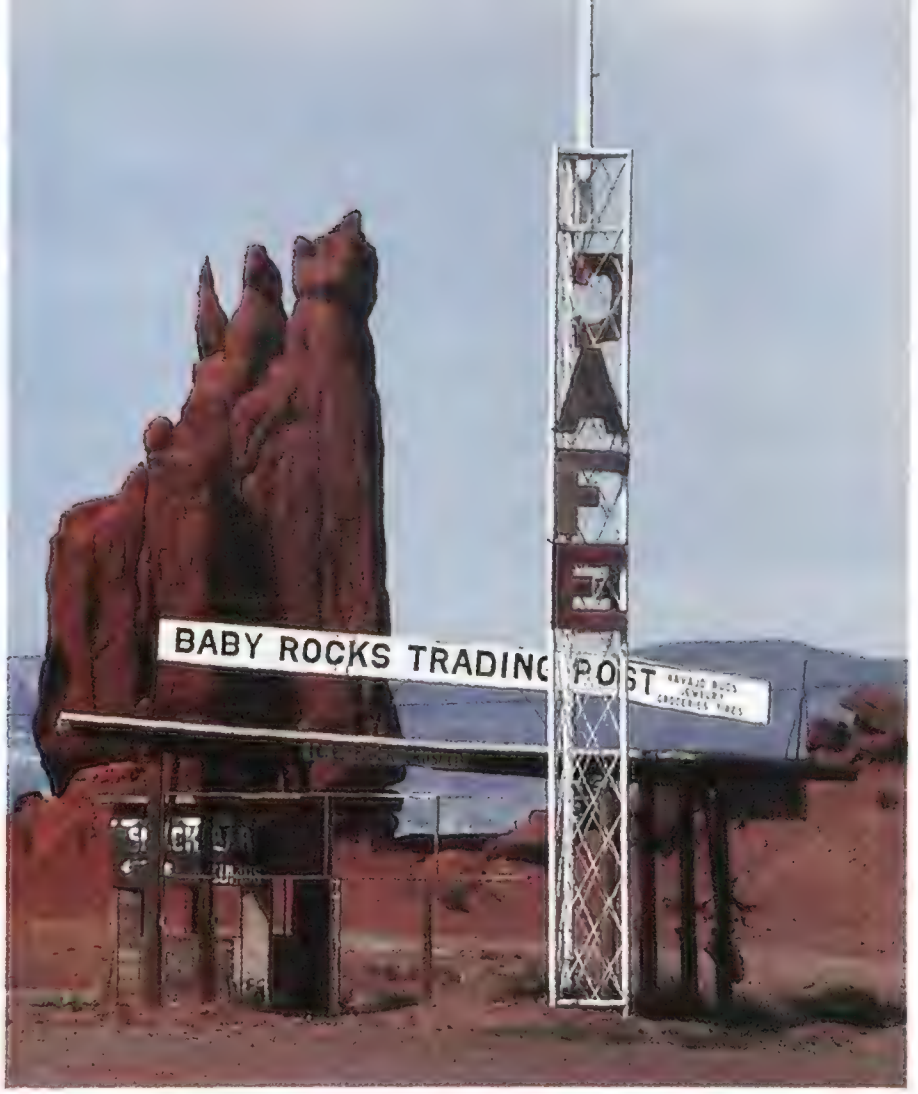
"I'm trying to learn more about white men," Joe Leaphorn says angrily to an ambitious anthropologist who has abandoned love for a historic piece of flint. "You wanted all that worse than you wanted your woman. What else will you give up for it?" Solving another case, Jim Chee "finally fathomed that while his people presume that if they're talking, you are listening, white people require periodic reassurance."

Tony Hillerman never shows anger. He is friendly, genial and alert, like a big old retired watchdog. "There is no meanness or smallness in Tony," says a friend, Norman Zollinger, an Albuquerque author. But Hillerman's books contain a tension beyond the puzzle play of crime and resolution. They are about country people and poverty, second-class citizens in a rich nation, Westerners oppressed by the Easterners who make the rules. They are about poor rural people who nevertheless make a successful culture of their own out of determination, tradition and a supple approach to modern times.

Hillerman doesn't just understand this kind of tension; he has lived it. "If I ever write an autobiography," he told me once, "I'll spend a lot of time explaining a kind of *us* and *them* attitude."

Hillerman grew up in the tiny settlement of Sacred Heart, Oklahoma, about 70 miles southeast of Oklahoma City. His family was poor: he lived in a home his father put together out of two oilfield shotgun houses.

A laundromat like this one provides the locale for a shooting that starts off Hillerman's *The Ghostway.*



Café sign at Baby Rocks Trading Post has reversed "C" so drivers can get the message coming either way.

Water came from a plunger bucket in the well; two buckets got it muddy. *Us* was the country kids of the little community; *them* was the city kids of the nearby town of Konowa.

"They were the town boys, who wore belt pants and low-cut shoes, knew how to shoot pool and use the telephone, and had indoor plumbing," Hillerman said affably. "We wore work shoes and bib overalls. I was 21 years old before I made my first telephone call. We felt we could fight better than they could; then when we fought them we lost."

Hillerman went to school at a Catholic boarding school for Potawatomi Indian girls. (The nuns kept him and his friends on the outside, too. "The nuns forgave us for not being Potawatomies," he once told a reporter, "but they never forgave us for not being girls.") "If you grow up identifying with a certain kind of people," he said genially, "the exotic people are not going to be the Potawatomies. It'll be the English teacher who went to Choate and never thought of a hungry day. It's not the Navajos; they're just like the people I grew up with."

Hillerman's route into the world of letters was not college prep. As soon as he was old enough he enlisted in the Army and went off to World War II. He fought in France, but he wrote home to his mother about the beauty of the countryside and how peaceful everything was behind the lines. "He wrote fiction," says his brother, Barney, a photographer from Oklahoma City. Tony won a Bronze Star and a Silver Star, and then something blew up under him in Alsace. "I don't remember going up, but I remember coming down, thinking: This is going to hurt."

When he came down, both legs were broken, and he could not see. He was picked up by a stretcher crew. The lead stretcher-bearer was blown up, and Hillerman took another short flight. Two friends came and got him on another stretcher and accidentally dropped him in a stream. He survived that, too. After months of daily poker games in the hospital, he returned to the United States on a hospital ship, with almost $90 in winnings, a cane and a patch over his left eye. At home was a message to call a feature writer from the *Daily Oklahoman* who had written about Hillerman's Silver Star. She had read the letters he'd sent to his mother, and she just wanted to tell him she thought he was a good writer.

"Having somebody tell me they thought I was good at something was an important moment," he said agreeably. "I decided to study journalism." He spent a career in journalism, working for United Press and several newspapers, including the *Santa Fe New Mexi-*

Michael Parfit is a freelance writer and a frequent contributor to SMITHSONIAN. *He enjoys reading Tony Hillerman mysteries at his home in rural Montana.*

Gas station at Teec Nos Pos Trading Post is in Arizona, near the New Mexico border. The reservation, which straddles both states, also extends north, up into Utah.

can, and retiring in 1986 as a professor of journalism at the University of New Mexico in Albuquerque.

Hillerman looks and talks like a man who would have gone quietly off into an old age of trout fishing and genial rumination. He isn't, and he didn't. By the time he retired, he was already a success at his next career: novelist.

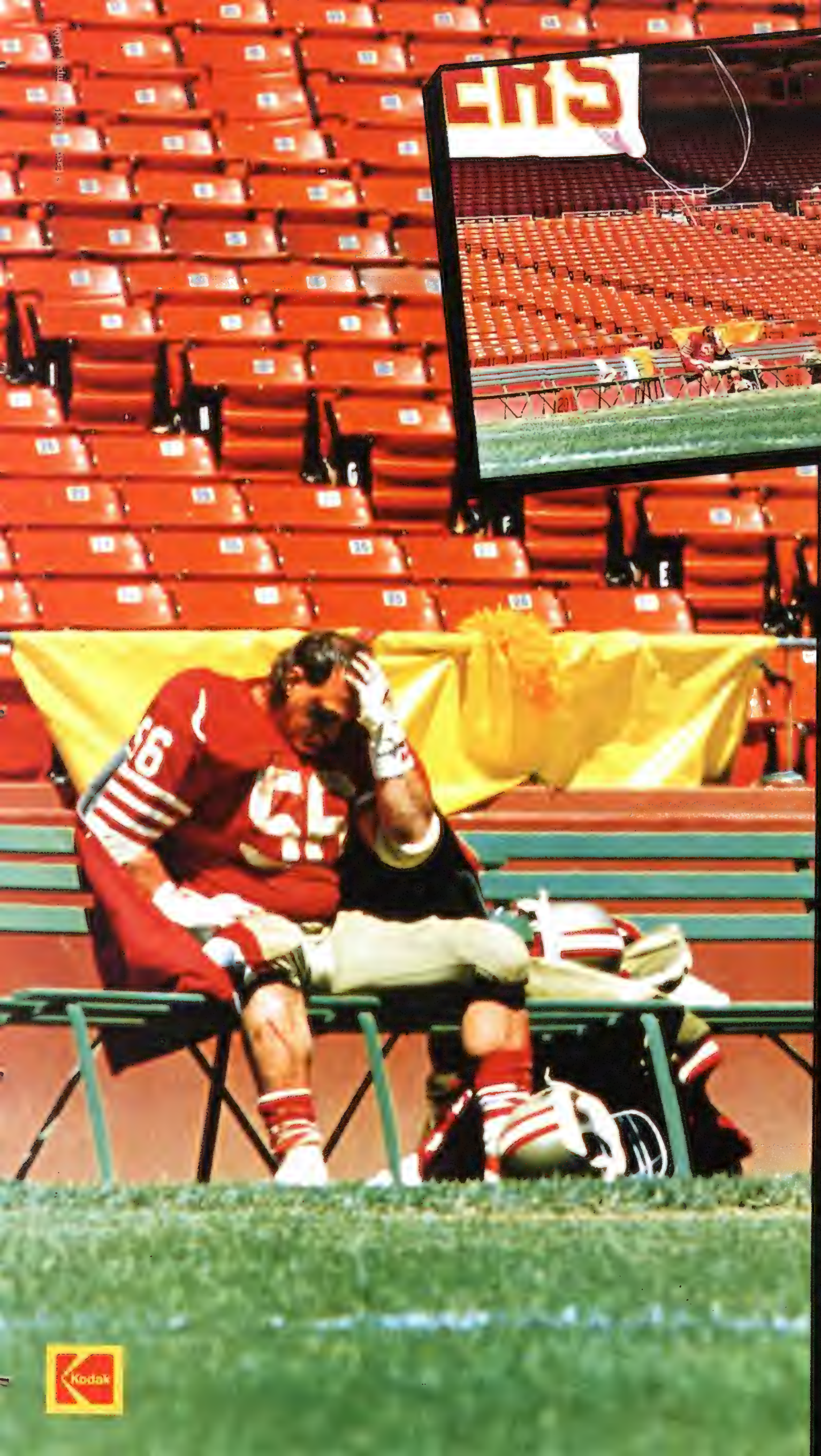
It was not, however, an easy breakthrough. His first manuscript about Navajo cops on the reservation, *The Blessing Way*, based on one of the major Navajo rituals, completely missed in its first encounter with *them*. "I think you should take out the Indian stuff," his agent said, but he persisted and found an editor who was interested. The novel was published in 1970. After a tough trip through the amazing landscape of publishing, Hillerman made enough of a truce with *them* to end up with three best-sellers and a new agent who had attended Princeton. But that hadn't changed his attitude.

Hillerman lives in a comfortable suburban home in Albuquerque that does not reflect the abundance of money his recent success has generated—a $400,000 advance for one book, for instance. ("All that money's kind of embarrassing," he said cheerfully. "Sometimes I think I need to buy something really extravagant, just to prove it's not Monopoly money.") A couple of days before we talked to Ronald Horseherder at Big Mountain, Hillerman, his brother Barney and I had left Albuquerque, westbound for the reservation.

The trip was like a journey through Hillerman's past and present, mingled with bits of his fiction. As we drove into the dry landscape of his books, it became apparent how at home he was here, too. This was where the part of the world called *us* lived.

We drove west, into the long, level tablelands, red cliffs and outbreaks of lava, toward Grants. We passed Budville, where in real life a couple had run a well-known bar until they were shot during a robbery. Hillerman described the mystery in detail, lingering on the crime and the subsequent arrest of the wrong man. Every once in a while he and Barney would get going about the past and Hillerman would unconsciously fire off a sentence that could begin any novel: "Weren't we hauling that damned airplane in the car when we ran into the mule?" He conversed mostly in stories; as we passed Grants and headed for Gallup he explained how a lake called Ambrosia was named—not because of the sweet, healing qualities of its waters, but because a man named Ambrosio had been found floating in it, dead.

We passed Window Rock, where Joe Leaphorn works out of tribal police headquarters, a big block of a building downhill from the natural arch that gives the place its name. The fenced yards around the houses were dusty. "Navajos don't plant flower beds and lawns," Hillerman said affably. "Whatever's around is what nature left there." Hillerman, in one of those odd juxtapositions of modern Navajo Nation culture, served as grand marshal of the Navajo Nation Tribal Fair parade in Window Rock in 1987. "They



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wanted me to ride a horse," he said. "I told them to find one in the same condition I'm in." So he rode in a big old convertible.

We crossed the high country of the Defiance Plateau on Navajo Route 3 and headed across Wepo Wash, where a pilot running drugs crashes his Cessna against a rock, setting off a hunt for murderers and cocaine in *The Dark Wind*. Researching the story, Hillerman asked a friend to fly the route of the plane, right up to the point of impact. Then he put Wepo Wash somewhere else. "Needed it farther west," he said. Hillerman loves the names of the reservation, places like Dinnehotso, Teec Nos Pos and Lukachukai, and occasionally he shuffles them around to suit his narrative. "Burnt Water," he said. "Isn't that a great name for a place in dry country? I moved it because I liked the name, and I regret it. I still get letters."

We stopped at Monument Valley for photographs. Hillerman got out of the car and stood looking at the great calm monoliths of red stone. "It just moves the spirit to see this," he said. The grandeur of this country runs through his books as a powerful undercurrent, about the same way it moves through the lives of Navajos: seldom dramatized, always present. Hillerman obviously finds the Navajo relationship to the land to be personally satisfying: ". . . that the only goal for man was beauty," he wrote in one book, "and that beauty was found only in harmony, and that this harmony of nature was a matter of dazzling complexity."

The complex landscape Hillerman admires includes people; it is not a coffee-table collection of scenic wonders. In *Dance Hall of the Dead* he writes about the rising sun striking both the Zuni Buttes and the yellow water tower at Black Rock. And when we drove past a wonderful formation of stone called Baby Rocks that looked like thousands of small red teeth, he loved both the stone and an old sign nearby. On the see-through sign the letter "C" was on the opposite side in the word "CAFE" so the word would look approximately right from either the east or west side (p. 95).

"I forget my social security number," he said. "I forget my wife's name. I forget my address. But I'll remember the café at Baby Rocks where the guy tried to compromise and please people coming from both directions."

We crossed onto the Hopi reservation and dropped in at the Hopi Junior-Senior High School. There an English teacher had invited his kids to discuss *Talking God*, a book that involves the Smithsonian Institution, ancestral bones and a religious mask. The kids had decided that the book, like most of the mysteries, was deficient in romance.

("Well," Hillerman told me later in defense, "when I started writing these things I was raising six kids." If he has loosened up a little now that all the kids are grown, it's hard to tell; recently a friend read a new Hillerman book and said, "My God, he's moving toward eroticism: he's got them shaking hands.")

Bar in Budville, Arizona, was the scene of a real-life robbery and shooting. Hillerman knew the details of the crime, although it was not one of his invention.

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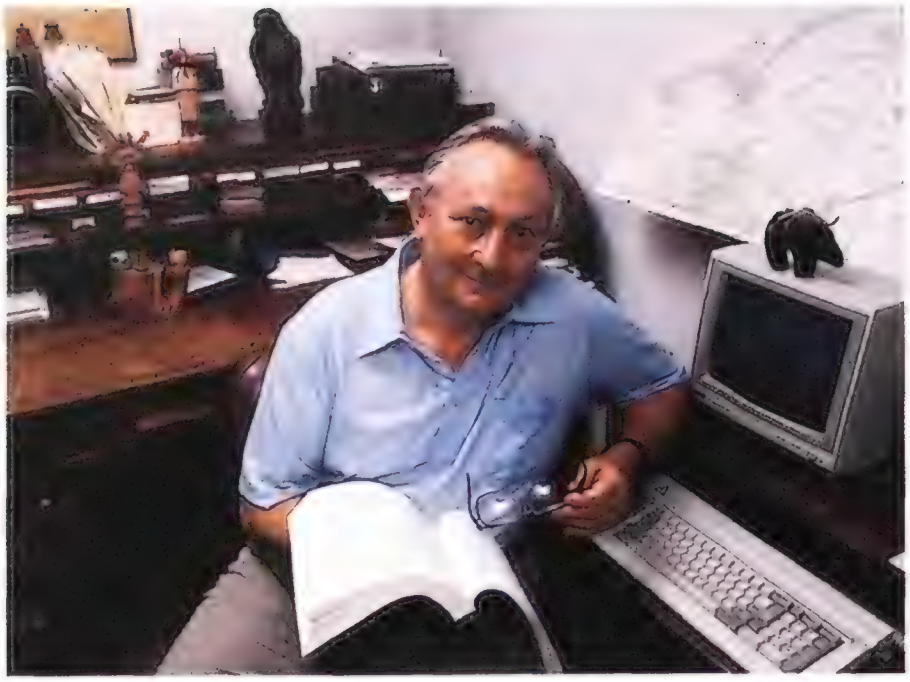
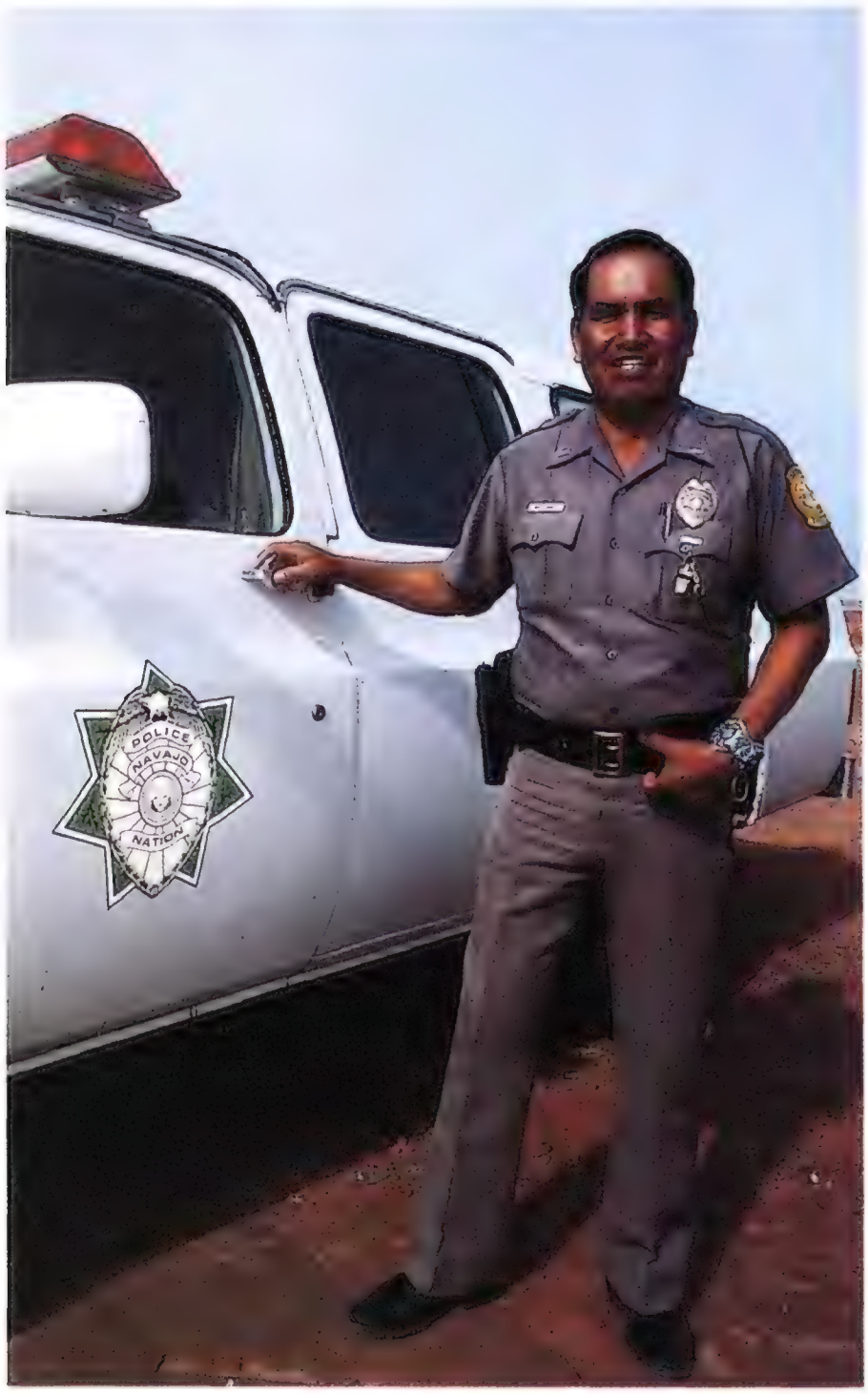


Hillerman goes over manuscript in his study, where he keeps a reservation map propped on his computer.



Lt. Ben Shirley, Navajo tribal policeman stationed at Tuba City, testifies Hillerman's stories are accurate.

Many of the students had written alternative endings for the books, some solving the romance problem—"While aboard the plane, Janet became personal, she didn't mean to, but she did." Hillerman wrote a long note back, which was posted on the wall under a headline: "LETTER FROM HILLERMAN." "Where were you guys when I needed you!!!?" he had written amiably. He praised their alternative endings and went on: "I grew up way out in the country like you. . . . It never occurred to me that just regular people like me could write books. But you know better. You can do whatever you want to do."

On five minutes' notice the school's 450 students poured into an auditorium and listened to Hillerman for half an hour, then mobbed him for autographs. It took him 15 minutes to get from the auditorium to the car, signing cheerfully all the way. "My class was pleased," the English teacher said. "They took a break from Hawthorne to read Hillerman."

At the far western side of the Navajo reservation is the town of Tuba City, Arizona. We got there late one afternoon. Tuba City is full of the curiosities of modern Indian life: there's a McDonald's just across the street from the old Tuba City Trading Post, not far from a bootlegger's shack. The mascot at Grey Hills High School, where most of the kids are Indian, is a knight in armor, and students are summoned from class by the chimes of Big Ben.

"You can feel the goodness flow out of the songs"

We arrived in Tuba City just in time for Hillerman to watch a group of Navajo, Hopi and Plains Indian high school students dance to a drum in the banquet room of a modern restaurant built as an octagon, like a hogan. Hillerman danced briefly and then listened intently to a remarkable 21-year-old Navajo named Irvin Tso (p. 102), who had begun learning to be a medicine man at the age of 5.

Tso was tall, slender and serious. He wore long braids and tiny earrings. He had just flown home from Ft. Lauderdale, where he had worked in a TV commercial for Levi's.

"Do you have a feeling when the healing is working?" Hillerman asked.

"I sense it when the patient is feeling it," Tso said. "I can think about it: This patient is going to be well. You can feel the goodness flow out of the songs."

Tso was at ease with all the crazy juxtapositions of the Navajo life. Besides singing the songs of healing for the people of his tribe, he was also auditioning for a role in the movie that Robert Redford is making of one of Hillerman's books, *The Dark Wind*. Like Hillerman, Tso had learned how to live in the world by riding it bareback.

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SANTA'S LITTLE HELPER.

Hillerman talks of healing with Irvin Tso, 21, who has been studying to become a Navajo medicine man—as has the Hillerman hero Jim Chee, a tribal policeman.

The movie was one of the most frequent topics of questions the next day, when Hillerman lectured at Grey Hills. Can we be in it? Are you going to be in it? Can they change it around? His answers were "Maybe," "No" and "When you sell a car to a used-car dealer he can take the bumper off if he wants to." Later he was more charitable: "You do a watercolor, then here comes a sculptor." The movie is scheduled to be released in 1991.

Hillerman was also questioned, shyly, about another theme that runs through his books: the role of witches in Navajo culture. Both Hillerman and Leaphorn are skeptical of the reality of witches: in the books, skinwalkers (witches that appear as animals) and other supernatural beings turn out to be crooks using superstitions to their own ends. But on the reservation Hillerman's attitude was ambivalent: he told an eerie skinwalker story himself, and listened without comment when, during our trip to Big Mountain, Ronald Horseherder described a woman who lived far up a red-rock canyon and left the tracks of a coyote where she walked.

After speeches at the school, and before driving to Big Mountain, Hillerman went down to the police station, a simple concrete-block building with white four-wheel-drive vans parked out back. Inside, blue-and-orange walls led to a drunk tank and cells where several men were doing short time in orange coveralls, and to a large conference room whose high walls were lined with the insignias of the many other government agencies the tribal police must work with. Hillerman had been here several years before. "Looks the same," he said. "Same Wanted poster, only they made the guy look older."

Hillerman's Navajo police are often confronted with situations peculiar to their culture: they must be aware of the intricacies of clan structures, for instance, and some find help in troubled times from the tribe's medicine men. When I visited the Tuba City police station earlier in the month, I had found that the descriptions rang true.

"The stories are accurate," said Lt. Ben Shirley, who had a straight back and a formal manner. "It fits right in: the traditional cultures, the values."

To Shirley and many of the officers, one of the most difficult parts of the job is handling a corpse; the ghost of a person who dies "unprepared" haunts anyone who comes in contact with such a corpse. Hillerman reminds his readers of this in one book by having a Hopi policeman, unburdened by that particular belief, offer to handle a corpse so Jim Chee doesn't have to trouble his mind.

"When it is time to pick up a dead body," Shirley said, "it is difficult. The majority of the time there is no choice but to go through with it. Later I will consult with a medicine man, a priest or somebody. I will seek spiritual direction, to get strength again."

In Hillerman's books Navajo tracking abilities are a bit like the landscape: unremarked but natural to the scene. But just as some Navajo officers don't even speak the Navajo language, some can't tell tennis shoes from boots in the sand. "Just because you're an Indian

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doesn't mean you're a good tracker," said Sgt. Larry Yazzie at Tuba City. Shirley had said that Yazzie was one of his best. Yazzie argued that it depended on the way you were brought up.

"We have been raised in open country," Yazzie said. "That way we learn to observe. I was raised as a sheepherder, and you do so much of it from day to day—you have to learn to recognize the footprint of each sheep in your flock." Although these days the tracks of malefactors are photographed and put in the files, the trackers themselves remember footprints like faces. "When you say 'Lost Boys' [a loose Tuba City gang]," Yazzie said, "footprints start coming to mind."

Harriet Brown, a secretary in the Criminal Investigations Section, was listening to our conversation. She had one thing to say about the veracity of Hillerman's books: "In those books they have the sheriff and the FBI and everybody else. But it's usually the Navajo police officer who figures out everything. And that's the way it is."

"I don't have any models for Chee or Leaphorn," Hillerman said, so I hadn't expected to come across a tall man with a "lanky, rawboned look," who enjoyed, as Hillerman wrote about Leaphorn, "the mild and abstract pleasure which the precise application of logic always brought to him." But when I was in Window Rock I had met a Navajo newspaper reporter whose life reminded me of Leaphorn's. Her name was Betty Reid. Like Leaphorn, she was skeptical about some parts of Navajo tradition; like Leaphorn her job cut across traditional beliefs—the closest Navajo word to "reporter," she said, was "gossiper." "If you are a traditional Navajo, that life is satisfying," she said. "If you are like me, with feet in both worlds, it is very different. It is sad to know Coyote is not really out there. It is sad that scientists say it is not true that people

Desert sand and scrub are typical Navajo landscape, made dramatic by outcrops like Ship Rock (opposite).

came from the bottom of the world through a reed."

To Betty Reid romantic notions of the way Navajos live were fanciful constructions by *them*. The frustration in her voice reminded me of Leaphorn's anger at the anthropologist. "There's no romance to being a Navajo cop," she said. "There's no romance to the witchery that happens out there. There's no romance to the Blessing Way. Even in the Blessing Way, you see a lot of mysticism, but actually, you're trying to heal yourself, and it's not nice to be ill. If you grew up in this life, it's a very tough life."

For Ronald Horseherder it has been a tough life, and now he faces tough decisions. Late in the evening after our trip to Big Mountain, Horseherder went looking for Tony Hillerman. He needed advice. He found Hillerman leaving a Sing Dance at the school. "I haven't decided," Horseherder said, with fervor, "whether to stay with my grandmother or go to college."

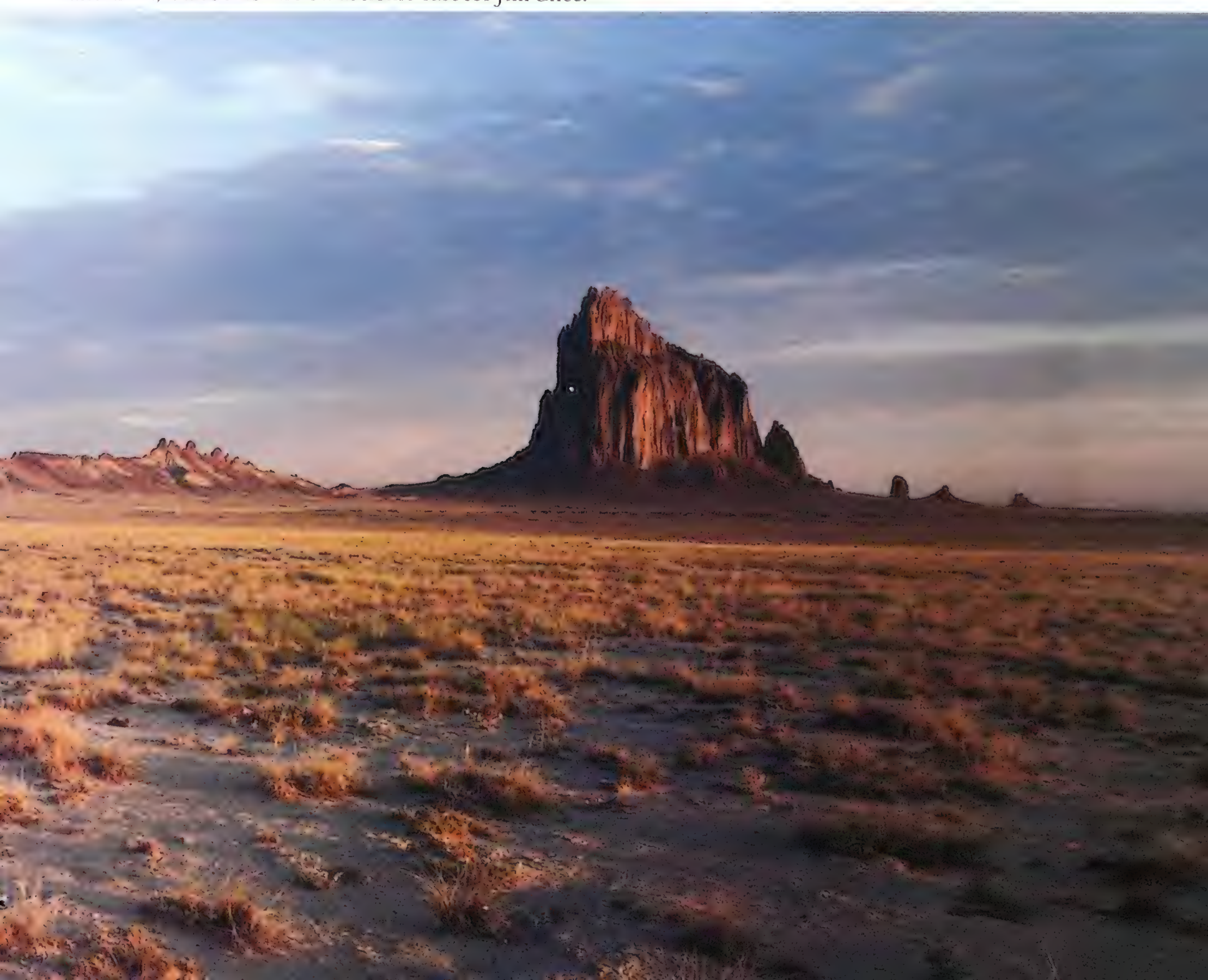
Hillerman was unambiguous. He knew you have to confront *them* on their own ground. He still knows where he stands: in four days of traveling Hillerman had said only one thing to me that was not amiable. "Nothing bristles my hair more," he had said, "than the damn ruling class."

Now the two men, the *biligaana* and the Navajo, walked together through the tall darkness of the Western night, curious allies in a long conflict. "You can have a lot more impact," Hillerman said, "if you go on to college and go into politics."

They walked a little farther and it seemed as if Hillerman was explaining the theme of his work, talking to all the Navajos he knows and writes about, who walk in beauty with the Earth and who ride modern life bareback, picking up what they need and remembering tracks.

"You have what it takes," Tony Hillerman said.

The town of Shiprock, New Mexico, known for this landmark, is also known now as home base for Jim Chee.



THAD STUMP *has been evaluating car performance for years. As a teenager, he spent his spare time around sprint cars at local dirt tracks in central Pennsylvania. Today, as a developmental engineer for Saturn, he spends his time around cars and tracks at the test facility in Mesa, Arizona. Here, Thad discusses the first few million miles logged on the world's newest car.*

"...Some people might think I have a pretty strange job. There are days when I'll spend eight or ten hours driving over the same pothole.

Other days, I'll only be doing left turns, listening for squeaks. Then we'll put in a week on the high-speed test oval, driving up to 110. When

my brother-in-law went to Florida last winter, we were driving up in Canada, at forty below.

Over the last couple years, we've tested our cars and components under every condition

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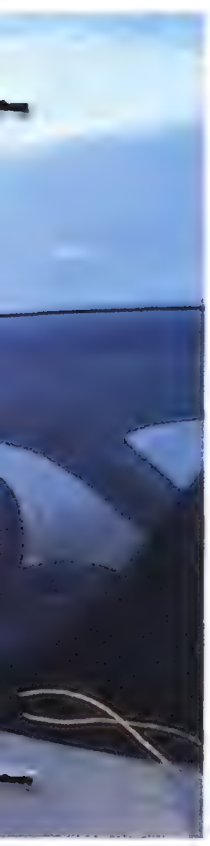
anyone could think of. On freeways. Over cobblestones. Pike's Peak. Death Valley. We've got almost six million miles stacked up so far.

Through the whole thing, we've made a big point of pushing this car to its extremes.

If we don't push this car to the edge, to the breaking point, you can bet somebody out there will do it for us.

And when you think about how critically some people are going to look at this car, we've got to make sure it's reliable.



All those hours in the driver's seat might not be quite as comfortable as sitting behind some desk.

But I've got to do it. I want to make sure our cars can take it.

SATURN

We just don't want to put something in the public's hands that isn't right. Or that, you know, has some glitch in it.

I don't think my job's so strange, when you look at it like that....''

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We'd like to uncover a hidden natural resource.

Did you know that the empty plastic soft drink bottles you throw away every day can be transformed into carpet yarn or automotive parts or fiberfill for ski parkas?

That used glass bottles and aluminum cans can be transformed into new ones?

And that yesterday's newspaper can be transformed into tomorrow's?

It all happens because of recycling. The trash we throw away is a "natural resource" that, with recycling, can be used to produce a multitude of new products.

Unfortunately, America recycles only 10% of its garbage, incinerates 10% and deposits a whopping 80% in landfills. As a result, we are having to cope with a monumental solid waste problem.

Our landfills are going–going–gone.

Americans throw away about 160 million tons of garbage a year. According to a recent study, plastics make up about 18% of the volume of solid waste in our landfills, paper and paperboard account for about 38%; metals, 14%; glass, 2%; and other wastes, 28%, all by volume.

As a result, in the past 10 years our country's landfills have decreased from about 18,500 to 6,000. In five years 2,000 more will close.

In their haste to find solutions, some local legislatures have proposed to ban plastics.

Unfortunately, a ban on plastics would do much harm and no good. We would lose all of the safety, health and convenience features of plastics, such as tamper-resistant closures and shatter-proof bottles.

Moreover, packaging would still be needed. A 1987 study showed what would happen if plastics were banned—the energy needed to produce the alternative packaging, its weight, its cost, and the volume of waste collected would all rise dramatically.

What to do?

At Amoco Chemical, we believe part of the answer to America's waste problem lies in recycling everything from glass to metals to paper to plastic.

Today, recycling is on the rise. There are now more than 1,000 curbside separation recycling programs across the country. Many are beginning to incorporate plastics.

Right now, almost 200 companies are recycling millions of used plastic containers into paint brush bristles, traffic signs, toys, floor tiles, wastebaskets and "plastic lumber" for decks and park benches.

Plastics are among the easiest materials to recycle. More than 150 million pounds, or 20% of all plastic soft drink bottles, were recycled in 1987.

How Amoco Chemical is helping.

Amoco Chemical is sponsoring a recycling program in New York demonstrating that used, polystyrene foam food service containers from schools and restaurants can be recycled into insulation board for commercial construction, cafeteria trays and home and office products.

We're participating in a consortium with other major plastics manufacturers involved in the construction of regional polystyrene recycling plants.

We're encouraging the start-up of new recycling efforts, helping to find better ways to collect and sort recyclables, and supporting efforts to create new markets for products made from recycled products.

At Amoco Chemical, we believe recycling can add years of life to our landfills while it transforms things that would ordinarily be thrown away into useful new products. We've only begun to uncover its benefits.

For a free copy of "Recycling. Do It Today For Tomorrow," call 1-800-727-0017. Or write Amoco Chemical, Recycling, 200 East Randolph Drive, Chicago, IL 60601.

Recycling. Do It Today For Tomorrow.

AMOCO

Amoco Chemical

By John Dornberg

Vienna's Dorotheum: a singular auction house and hockshop

State owned and operated, it deals equably in both trash and treasure. It will take anything in pawn, from bedsprings to rubies

At the Dorotheum, visitors are tempted by an infinite number of trinkets and treasures; here, a small bronze.

The Viennese call her "Tante Dorothee" (Aunt Dorothy) and she is 283 years old. She was born in 1707, and Hapsburg emperor Joseph I himself was her father. Despite her age, she is exotically decorative, going strong and as beloved as ever.

Aunt Dorothy has the kindest heart in the world and the biggest bargains. Within minutes, no questions asked, she'll give you a loan of a few Austrian schillings to a few million, and will accept virtually anything and everything as collateral—from a rusty hammer to a helicopter, from a box of safety pins to a diamond brooch, from an old rug to an Old Master painting. At the same time she offers unique opportunities in garage-sale treasures, bric-a-brac, kitsch, priceless porcelain, exquisite antiques, precious jewelry and fine art.

She does a multitude of things with a cornucopia of objects and provides a vast array of services. She lends money, buys up and sells heirlooms, deals in and appraises valuables. On the one hand she is a pawnbroker, the last resort for the momentarily impecunious, and on the other a purveyor of flea market finds. But as an increasingly serious competitor to Sotheby's and Christie's, she is also a major player on the international auction stage.

Poets have written odes to her, composers have immortalized her in song. Princes and paupers alike, great artists and great villains, revolutionaries and dictators—the famous and infamous—have patronized her both as borrowers and buyers. Wolfgang Amadeus Mozart and Franz Schubert, it is said, might have starved without her generosity. The likes of Hitler, Lenin, Stalin and Trotsky, all at one time or another residents of Vienna, reputedly were among her clients.

When Aunt Dorothy beckons with her bargains, which is at least thrice daily, it is like a siren's song for collectors and connoisseurs. Resident on Vienna's Dorotheergasse, just a two-minute walk from the State Opera House, the Hofburg (Imperial Palace) or St. Stephen's Cathedral, she is also one of the city's main tourist draws. Indeed, I know of no greater, zanier,

General manager Alfred Karny (center) and board members Peter Pechar (left) and Wolfgang Kraml stand proudly before their headquarters. At age 283, the institution uses up-to-date management techniques.

more fun-filled or more rewarding pastime than to spend a couple of days with her.

Aunt Dorothy is owned by the Austrian government and her formal title is Dorotheum Auktions-, Versatz- und Bank-Gesellschaft m.b.H., which translates as Dorotheum Auction, Pawn House and Banking Company Ltd. A pawnbrokerage and auction house, yes, but, as Alfred Karny, the general manager, is quick to emphasize, "the oldest, largest and most unusual in the world."

In 1989, a record year, the institution had a business volume of more than $110 million, derived from auctions and direct sales, lending, banking and other services, and registered a before-tax profit of $4 million, making it Austria's most successful state-run enterprise. During that year more than 194,000 individual lots were sold at auction and more than 515,000 items by direct sale (for which bids are not required); and some 140,000 objects were brought in as loan pledges. On average the inventory in the vaults and warehouses numbers 350,000 pieces, each one of them bearing a computer-printout tag with detailed description and information on origin, style, manufacturer or artist, and an appraiser's estimate of value or auction start-up price.

Besides the sprawling, six-story, block-square neo-Baroque headquarters building at No. 17 Dorotheergasse and its nearby Kunstpalais, where only fine art is shown and sold, the Dorotheum has 21 branches—14 in other districts of Vienna, and 7 in other Austrian cities, including Graz, Innsbruck, Klagenfurt, Linz and Salzburg.

Aunt Dorothy employs 550 people, 90 of whom are expert and highly trained appraisers, art historians, and internationally known authorities on everything from archaeological finds to historic weapons and uniforms, from sculptures to folk art, from textiles to classical modern and contemporary painting. One of the few freelance connoisseurs on the team is Archpriest Chrysostomus Pijnenburg, the Russian Ortho-

Photographs by Manfred Horvath/ Regina Maria Anzenberger

Aunt Dorothy's is a busy, humming place in which the sounds of auctions can be heard three times a day.

dox Bishop of Vienna. He is the specialist on icons. "You could hardly find a more qualified man," Otto Hans Ressler, director of the fine art department, says with a smile.

Auctions usually start at 2 P.M. weekdays and 10 A.M. Saturdays in the cavernous, stucco-ceilinged dispersal rooms—the Maria Theresa, Emperor Franz and Ludwigstorff chambers. Even in an off-season vacation month such as last July, there were no fewer than 57 auctions at the Dorotheum. They covered the collector's waterfront, from jewelry, precious stones, watches, porcelain, ceramics, glass, silverware, furs and carpets to furniture, old guns, books, musical instruments, photographic and optical equipment, typewriters, sewing machines, video recorders, television sets, home appliances, and even used cars and vintage motorcycles.

"We will take in practically anything and everything as either a pawn or object for auction, and there is almost nothing that we do not disperse," says Stanislaus Bohuslavek, one of the two *Hauptschätzmeisters*, or chief appraisers, who has been at the Dorotheum for more than three decades.

"We cover the range from pins and needles to entire households and whole factories, from everyday consumer goods to the world's great art treasures," Bohuslavek says. "We have even accepted and sold airplanes. And you know what? Everything sells. Sometimes, of course, it may take a while and we may be forced to mark down the starting price a couple of times, but eventually every object finds a buyer or bidder—*einen Liebhaber*, as we say, 'a lover.' "

In this wide spectrum the fine art department has been playing an ever greater role. It is located three entrances down the street, at No. 11 Dorotheergasse, in the Kunstpalais, a Baroque mansion with ornately eye-popping interiors that was intended as the private residence of Chancellor Engelbert Dollfuss before he was assassinated in 1934. Last year it reaped a record business volume of nearly $20 million from auctions. Thanks to Ressler and Karny's efforts, the Dorotheum is moving into the front ranks of the international market, especially with 18th- and 19th-century South German, Austrian and Central European art, Biedermeier antiques and art objects, Art Nouveau and classical modern as well as contemporary art. Old Masters are also a factor.

The Dorotheum is looking abroad, too. It has entered into a joint venture with Ader Picard Tajan, the renowned Paris auction house, for dispersals in Paris and has also begun testing the water with sales exhibitions in Tokyo.

Aunt Dorothy is clearly taking big steps away from the pawnshop image with which she was born in 1707. Local lore ascribes that event to the solicitude of Emperor Joseph I for the welfare of his subjects—especially the poor in Vienna, then one of Europe's greatest capital cities, with a population of about 100,000—and his indignation over the "widespread plague of usury." Commercial moneylenders were charging the destitute interest rates of up to 173 percent per annum.

Browsers and professional dealers haunt the halls and galleries where virtually every object conceived by the minds of men and women can be found on view. Among most popular items: period furniture and rugs.

Joseph I decreed the establishment of an imperial pawnbrokerage, a *banco della pietà* where "in time of need anyone can borrow, by pawning a pledge, what one wishes from the value of 1 guilder to 100 guilders at a small fee and reasonable rate of interest." Any profit that this "bank of piety" might make, he ordained, should be passed on to charitable enterprises.

Called the Versatz- und Fragamt (Pledge and Loan Office), it opened for business on April 1, 1707, in an old, abandoned building on Vienna's Annagasse. Though pawnbroking was the main purpose, the original charter provided not only for auctioning the unredeemed pledges but also for voluntary auctions of "all manner of objects such as gold, silver and jewels, goods of other metals, furniture, pictures, books, textiles, clothing and crafted products."

The imperial pawnshop thrived and did much to eliminate usury during the next decades, but the auctions became increasingly unruly, and the place eventually gained a reputation for bureaucratic indolence and corruption. It took Emperor Joseph II, the founder's grandnephew—an even more enlightened and progressive monarch, and very eager for popularity—to put a stop to that.

According to Viennese legend, he disguised himself as a poor commoner, went to Annagasse and tried to pawn a battered old hat, only to be turned away by the appraiser's arrogant laughter and refusal to lend so much as a kreuzer, then the equivalent of a mason's hourly pay or the price of a *Semmel*, a hard roll. Joseph II identified himself, so the story goes, fired everyone and ordered a shake-up. He also decided that the building was much too small and decreed that the Versatz- und Fragamt be moved to the former Dorotheerkloster, the Monastery of the Canons of St. Dorothea, at No. 17 Dorotheergasse. The abbey and its 15th-century church had recently been secularized. Shutting down ecclesiastical properties was something for which Joseph II had already won quite a reputation.

On December 27, 1787, the monastery-and-church complex was ready to reopen as a pawnbrokerage and auction house. It soon became known as the "Dorotheum"—and as "Tante Dorothee," which has stuck for two centuries. So has the location, though

John Dornberg is an American writer living in Munich, from which he ranges widely. He last wrote about the wooden sculpture of Czech-born Magdalena Jetelová.

radical reconstruction and expansion between 1896 and 1901 resulted in a new building: the present structure was designed to accommodate large showrooms, sales areas, auction halls, storage facilities and two basement floors of vaults that, I was assured, are as safe as Fort Knox.

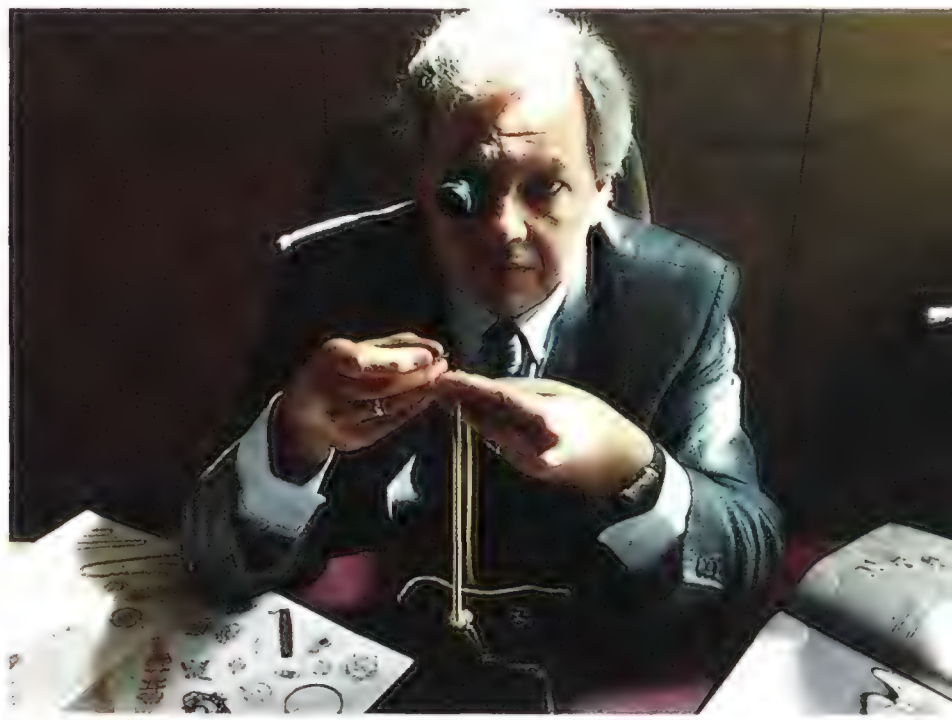
For more than 270 years the Dorotheum operated on the basis of a nonprofit foundation and as a government agency under direction of the Ministry of the Interior. Its employees, from loan clerks to auctioneers, from the lowliest furniture mover to the general director, were in effect civil servants. When annual proceeds from auctions were too high, interest rates on loans were reduced. In years when there were losses, they were made up by the Austrian national treasury. That changed in January 1979 when the Dorotheum was reorganized as a limited company, all of whose shares are owned by the government. Its managers are no longer bureaucrats or political appointees but business professionals. Karny and fellow management board member Peter Pechar have the Austrian equivalent of MBAs. The third member of the board, Wolfgang Kraml, was a bank executive before he joined the team. Nowadays Aunt Dorothy is supposed to show a profit, and does. "In fact," says Karny, "we have become a major economic enterprise."

A reliable economic barometer

The Dorotheum has always been a reliable barometer of the state of the economy and world affairs, and for some time now the needle has pointed to fair weather. Austria is on a high roll. "I don't even have to read the newspapers or check the financial pages to know how things are going—just our own daily loan and auction records," says Kurt Hrstka, the commercial director. "It's an old pattern in Vienna. Whenever business slumps or credit becomes tight, local shopkeepers will hock their heirlooms, their wives' furs and jewels, the family silver, and sometimes even their cash registers. Lending always skyrockets and auction sales plummet during a recession. But when there is a political crisis somewhere in the world, we get panic buying of gold here—any kind of gold jewelry—as a hedge against trouble."

Aunt Dorothy still lends with her traditional generosity and according to rules that have barely changed in almost three centuries. Cash loans are for a three-month period, with six weeks' grace before the pledge is considered unredeemed and goes on auction. Loans can, however, be renewed for successive three-month terms with additional six-week grace periods, provided fees and interest are paid. If an unredeemed pledge brings more at auction than the loan principal, interest, and the Dorotheum's handling fees and commis-

Looking like consulting physicians, the most expert appraisers of fine jewelry, watches, silver, hold court.



Jewelry is the most frequent pledge at Aunt Dorothy's. Chief appraiser Horst Maly carefully inspects some.

At Dorotheum they are empowered to grant loans of as much as 50 percent of the value of an object.

Archpriest Chrysostomus Pijnenburg, Vienna's Russian Orthodox Bishop, is the firm's expert adviser on icons.

sion combined, the surplus is paid to the debtor; and if the debtor does not come to collect, the sum is kept in escrow—for 30 years. The amount of a loan ranges from 20 to 50 percent of the appraiser's estimate of an object's potential starting price at auction. Numerous factors enter into this decision: material value of precious metals and gems, in the case of jewelry; condition of the item; likely appeal to collectors; market trends; changes in taste, fashion, fads and models; even the seasons.

A favorable season for pawning mink

"On a good resalable item we may lend up to half of its value, while on some object that cannot be sold easily or quickly it may be only 20 percent," explains Stanislaus Bohuslavek, chief appraiser for all departments except those dealing in jewelry, watches, precious metals, coins, stamps and fine art. "For example, a mink coat pledged in February is going to bring less, if unredeemed, when it goes on auction in summer than an identical coat pawned in June and auctioned in November. Or consider cameras. The manufacturers now put new models on the market every two or three months, so that the price decline on a used camera is tremendous. The amount of the loan is up to the appraiser, but he is liable if he lends more than the unredeemed item brings at auction. The difference is deducted from his salary. So, he can hardly afford to make a mistake."

Mistakes are few because of the experience and expertise of the appraisers, readily recognizable by their white lab coats. A prerequisite for being hired is formal training in a craft: at least a journeyman's, preferably a master craftsman's, diploma as a furrier, tailor, cabinetmaker, optician, electrician or bookbinder, for example. Then follows eight to ten months' intensive schooling in recognizing and evaluating the myriad items that may be brought in as pawns or for auction—from Art Deco ashtrays to zebra-skin rugs, from old Russian samovars to the latest Japanese audio equipment. Appraisers must know all the patterns of and weaving techniques for Oriental carpets, the hallmarks of all kinds of porcelain, and the different artistic styles and schools. The training manuals are hundreds of pages thick. But that is not all.

Unless the aspiring appraiser happens to be a trained carpenter, there is an additional one-year course in cabinetmaking, to help trainees evaluate the hundreds of pieces of furniture, mostly antique, that pass through the Dorotheum each day. Moreover, all of Bohuslavek's experts are given seven market-oriented refresher courses each year.

The required expertise is just as great across the main floor lobby in the *Pretiosenabteilung*—the jew-

There is as much expertise within the hidden sections of the Dorotheum as out front. In a cluttered workroom of the antiquities department, appraiser takes the measure of 18th-century altar angel; all objects are scrutinized.

elry, watches, gemstones and precious metals department—where Hubert Mader is the chief, and Ferdinand Gruber, his deputy. There, only master watchmakers and goldsmiths are even considered as applicants. After passing a grueling aptitude test they are given a six-month course in gemology and diamond cutting at the German Gemological Institute in Idar-Oberstein, Europe's leading center for the study of precious and semiprecious stones, with another half-year of in-house instruction on how to distinguish between various periods and styles of jewelry design, from the late 18th through the 20th centuries. In addition, Mader and Gruber's estimators have at their disposal a sophisticated laboratory with precision scales, fluoroscopes, spectrographs and high-powered microscopes, as well as a library with detailed information on all European assay-office and maker's marks.

Small wonder, given all this connoisseurship on the part of Aunt Dorothy's appraisers, that it usually takes only a few minutes to get a loan on a pawn or an estimate of auction value. In stark contrast to the ornate showrooms and salesrooms, these transactions take place in an austere, functionally modern main floor hall that is vaguely reminiscent of a post office. There I watched Gerhard Kulhanek, the carpet expert, briefly eye and feel a Persian rug. I heard the figure "50,000 schillings"—about $4,200—mentioned. It was the estimated starting price. The customer nodded. A clerk began typing Kulhanek's dictated description of the piece into a computer terminal. The printer spewed out a contract and tag in quadruplicate. The rug disappeared into a bin, the customer walked out.

At another counter Ferdinand Gruber inspected a gold chain bracelet that a shopgirl had handed him. "Just a moment," he said, stepping back and going into the laboratory to test it for gold weight. In 30 seconds, he returned and offered her the equivalent of $100 as a loan. The girl beamed. The computer printed out a numbered pawn ticket, the girl was given the money and she left.

But there were also disappointments. Heaving a sigh, Peter Lehrkinder, an expert on minor and decorative arts, watched a man extract six oil paintings that were carefully wrapped in a bedsheet—the kind of pictures sold at sidewalk art shows. With each one Lehrkinder shook his head sadly. "But I'm desperate, I need cash," said the man. "We're inundated with this stuff," Lehrkinder replied, but I could already see his Aunt Dorothy heart melting. "All right," he said, "maybe 500 [about $42] for that one in Rembrandt style."

Not only will the Dorotheum accept almost anything as a pledge, but it does so without asking questions, usually not even requesting identification. The principle of anonymity goes back to the time of Joseph I, who decreed that need was insufficient cause for shame; no one should be publicly exposed for it. It is almost impossible to identify past debtors. The persistent rumors in Vienna have always been that Duke So-and-So, Count Such-and-Such or the famous writer This-and-That used to visit Aunt Dorothy regularly to keep flush. But try to prove it. I once combed through a couple of dozen bookshops and libraries in search of anecdotal information about the Dorotheum. "You won't find it," I was told rather sharply. "We

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Sculpture fragment and stacks of paintings in storage room at fine art building await the appraiser's eye.

Viennese are very discreet about our dealings with Aunt Dorothy."

There were times when the anonymity rule was a boon to thieves, fences and forgers, and a tribulation for the robbed and burglarized who had to buy back their stolen property at auction. One thing that Aunt Dorothy no longer accepts as pawns is baby carriages. In the 1960s there was a spate of cases where destitute Viennese took infants out of buggies left momentarily unattended, placed the babies on the sidewalk and wheeled the carriages to Dorotheergasse to pawn.

"But that is past history," says Hubert Mader. "We now get daily police-description lists, and also registration numbers, of all stolen valuables and art. As a result, very little stolen or forged property comes in. The Dorotheum has gotten a reputation as a dangerous place to dump loot and fakes."

While many people come in with exaggerated ideas of the value of objects they want to auction or pawn, there are also unexpected and happy surprises. With a smile, Ferdinand Gruber tells of the old lady from one of Vienna's poorest neighborhoods who brought in a blackened metal tray hoping to pawn it for 500 schillings. "I rubbed on it a bit," says Gruber, "saw it was sterling, took it to the lab and cleaned it, and recognized a gem of Jugendstil decor. She nearly had a heart attack when I told her that instead of a loan I could give her an advance of 50,000 schillings and that it might bring considerably more at auction."

At one auction of 300 diverse lots one afternoon, I saw a stuffed wild goose mounted on a wooden board go up in hectic bidding from $5 to $23; a color sketch of an obscure Austrian town by an obscure 19th-century artist climb from $76 to $246; and a manual adding machine quadruple from $30 to $120. But a fine Meissen soup tureen brought only its starting price of $1,900, as did a windup musical china doll at $384. A Meissen porcelain figurine, called up at $615, found no bidder at all. Neither, for that matter, did an 18-inch wood carving of a "Blessing Christ," offered at $250. But that may have been because the auctioneer announced that it had "two fingers missing."

Ambling through the maze of display rooms and salesrooms one day, I spotted a rather battered 19th-century birdcage for $253, a pair of pliers for $6, a set of handsaws at $4, a package of two new bedsheets for $10, some men's handkerchiefs at $1 each, a collapsible fishing rod with automatic reel at $20, two car antennas for $6, a new battery-operated lady's shaver for $15, a used hair dryer at $12, a set of five 1970s West Virginia license plates for $38, two quart bottles of a brand-name Scotch whisky (confiscated somewhere by Austrian customs for reasons not given) at $23, a 14-karat gold necklace for $260, two white-gold bracelets set with blue sapphires at $420 each, and a 9-by-12-foot Kashmir carpet for $4,000. Some of the items were for direct sale. The other prices were starters for future auctions.

These auctions at the Dorotheum are among the best entertainments in Vienna. At the five weekly dispersals of jewelry most of the bidders are women who are on the hunt for bargains they would never find in the shops. They give no quarter when they have their sights set on a piece they want, and the looks of envious contempt from losers or haughty triumph from winners are as icy as the diamond trinkets. By contrast, a sale of old firearms is like a men's club meeting of collectors, although the bidding can be just as intense as the women's.

The rules of Aunt Dorothy's game

Participating is even more fun, though it pays to know Aunt Dorothy's ground rules and peculiarities. Instead of a hammer to signal a close, the auctioneer sounds a bell on the bench. Written bids may be placed up to an hour before. Even if your German is fluent, keep a sharp ear—the Viennese dialect of the auctioneers is daunting. Fortunately, there are English-speaking in-house agents—*Sensale*—who will bid according to your instructions if you cannot attend or if language is a barrier. They charge a commission of 1.2 to 2.4 percent of the final price. Though the Dorotheum publishes catalogs for the fine art auctions in the Kunstpalais and for several periodic, specialized dispersals of rare books, old toys and dolls, stamps, coins, motor vehicles, or the

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best-quality antiques and porcelain, there are no catalogs for the daily auctions. Instead, the objects go on display in one of the showrooms a week or two before each sale.

I wanted a little vase of blue cut glass with gold decor and a hand-painted floral design, said to have been made between 1850 and 1860, along with a nonmatching blue-glass stopper judged to be "even a little older." Call-up price on a Wednesday afternoon would be 900 schillings, or about $76. Knowing that the Dorotheum's starting prices are less than half the object's market value, it would be a bargain if I could get it for so little. Never having bid at an auction before, I entered the hall with a case of gambling fever.

I sat impatiently as more than a hundred lots were called up. Finally the auctioneer came to what I already considered "my vase." My heart beating faster, I listened carefully to whether he would mention written or agents' bids. None! My hand shot up like a rocket. My eyes darted around the crowded hall in search of rivals. None! "Nine hundred for the blue vase with the nonmatching stopper," the auctioneer announced, pausing for what seemed like an eternity and then saying, "Going, going, gone. To the gentleman in the sixth row center." The bell tinkled. It was mine. I went up to the counter and paid: 900 schillings plus 90 schillings buyer's commission and 20-percent turnover tax which, I was assured, would be refunded on my leaving Austria. For the equivalent of about $98 I had acquired one of Aunt Dorothy's fabulous bargain treasures. Was it really worth that? Why had there been no other bidders? I looked at it both admiringly and skeptically, then heard an elderly woman behind me say, *"Alles hat seinen Preis, alles seinen Wert, und alles findet einen Liebhaber"*—Everything has its price, everything its value, and everything finds a lover.

A welcoming and genial figure, Otto Hans Ressler, the director of fine art, is pictured in the arched and vaulted hallway of Vienna's Kunstpalais, the Baroque structure where auctions of Old Masters are held.

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THERE'S BEEN A LOT OF TALK about the environment lately. But out on Chesapeake Bay, sailing around on a vintage skipjack, a group of school kids are learning that when it comes to the environment, actions speak louder than words.

Myrtha Allen, Environmental Sciences teacher at P.S. 405, Baltimore, explains, "Most of my kids are city born and bred. They live in apartments, they get their milk in cartons, their eggs in those styrofoam containers. They were about as interested in the environment as they are in

"IT WAS THE FIRST FISH Jawan had seen that WASN'T SURROUNDED by french fries."

MYRTHA ALLEN,

homework." She smiles at a nearby eight-year-old. "And who can blame them? Some of them, like Jawan here, had never even seen a live fish before."

That's where the Chesapeake Bay Foundation stepped in. Since 1966, when it started in Annapolis, Maryland, with a rented fishing trawler and little else, the Foundation has taken more than 300,000 students out into the Bay to experience the environment first hand. And at the same time making them aware of how important their contribution is to the future of the planet.

Myrtha puts it simply. "To get these kids wanting to clean up the world, we've got to get their hands dirty."

And they do. They get very dirty.

"Oh yeah," chuckles Myrtha, "we do it all. Once we threw a net in just to see what we'd get. When we pulled it up, sure enough there were the milk cartons, the soda cans, the egg containers. And flapping around in the middle of it all was this big, cranky striped bass. You should've seen their faces.

"We took 20 little consumers out on a boat that day. We came back with 20 budding environmentalists."

At Toyota, we're proud that through the support we give to the Foundation more kids like Jawan will be able to experience our fragile environment first hand. And hopefully start playing an active part in preserving it.

Is the program working? "These kids are organizing neighborhood recycling drives,

they're writing letters to Senators. Take a look at these posters some of my students have been doing."

The classroom walls are alive with crayon and pencil. Bright orange crabs. Smiling oysters. Families of ducks.

And one poster that stops everyone. It's of a smiling little boy holding hands with a big striped bass. And boldly scrawled above both their heads is one word: "Brothers".

And it's signed by Jawan. Age eight.

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Flanked by telescope domes of another era, Irwin Shapiro, director of the Harvard-Smithsonian Center for Astrophysics, surveys his domain in Cambridge, Massachusetts. The staff of scientists numbers 170.

By Bruce Fellman

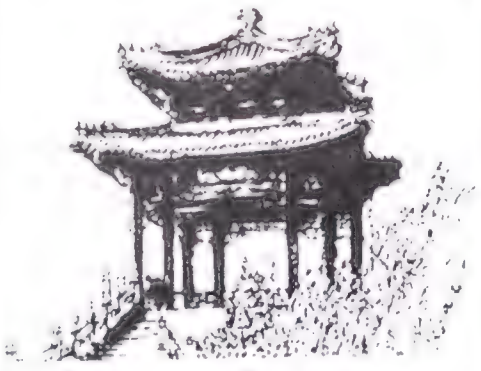
After 100 years discoveries come faster and faster

In 1890, Samuel P. Langley put a Smithsonian observatory on the map; now, scientists there are mapping the Universe, among other things

One hundred years ago, Samuel Pierpont Langley, astronomer extraordinaire and Secretary of the Smithsonian Institution, finally fulfilled the wishes of John Quincy Adams. In 1890, Langley created the Astro-Physical Observatory of the Smithsonian, a "lighthouse of the skies" in Adams' reversed metaphor.

Unfortunately, it fell a little short on illumination. The Secretary was low on cash, and Congress, which controlled the Smithsonian purse strings, was stingy. So Langley tapped a small fund set up by private donors—five grand came from none other than Alexander Graham Bell—and pared back his expectations. Instead of a facility to rival the world's greatest research institutions, he settled for "a wooden structure of the simplest and most temporary character."

Located in Washington, on the Mall behind the red sandstone Smithsonian "Castle," the observatory was not on any astronomer's list of great locations. For starters, the tin-roofed building was oppressively hot in the summer, with indoor temperatures frequently topping 100 degrees F. Clouds often covered the sky. Worse yet, the structure was close to a busy street; horse-



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drawn carriages rattled the equipment and, no doubt, the observers.

From this shaky beginning, however, Smithsonian's observatory did go on to become one of the planet's premier "lighthouses." A slight variation in its moniker (now the Smithsonian Astrophysical Observatory, or SAO), a move north in 1955, a marriage in 1973, and a century of science later, the Harvard-Smithsonian Center for Astrophysics (CfA), now headquartered in Cambridge, Massachusetts, is an international leader among students of Heaven and Earth. (The SAO, incidentally, continues to exist, but both it and the Harvard side are as intertwined, and difficult to separate, as ivy on an oak.)

"I try to get the very best people I can—that's where the bright new ideas come from—and I attempt to provide researchers with world-unique facilities," explains CfA director Irwin Shapiro, an expert radio astronomer who oversees a joint budget of more than $40 million that keeps some 170 scientists and hundreds of technicians and support personnel busy.

Ensconced in bustling labs and offices on historic Observatory Hill, a mile from Harvard University, the CfA is a four-acre amalgam of tradition and futuristic science. The oldest building houses Harvard's Great Refractor, an elegant brass-and-mahogany 15½-inch telescope that was the largest in the United States when it went into service in 1847. The most recent addition to the Garden Street group is the Perkin Laboratory, which was completed in the early 1970s and contains, among other things, a library of 60,000-plus volumes. In these and four other uneasily interconnected structures of various vintages and architectural styles are such treasures as: the data bank from the Einstein x-ray satellite; a state-of-the-art image-processing computer system; a collection of more than 400,000

Mr. Fellman last wrote in July 1989 on biomechanics and on new research in combustion in October 1987.

Bona fide Renaissance man, Langley founded observatory with $10,000.

astronomical photographs; a lab that re-creates conditions on the surfaces of stars; clockmakers and their timepieces accurate to within one second every 300 million years.

Curiously absent are the giant telescopes most of us think of as mandatory parts of any stellar research organization. Stranger still, most of the work here goes on by day, with scientists quietly bent over computers.

Of course, that shouldn't be too surprising. The lights and haze of metropolitan Boston largely blot out the stars, and these days, observations from the far-flung viewing sites on Earth, as well as from those instruments on board satellites, are logged on computer tape. Astrophysicists no longer need to be night owls. "I've never even been much of a stargazer," admits one CfA astronomer.

Still, scientists have plenty of opportunities to observe the cosmos. The organization maintains outposts in Massachusetts, Texas and Arizona, site of the innovative Multiple-Mirror Telescope (MMT), operated jointly by the SAO and the University of Arizona (SMITHSONIAN, May 1979). The observatory there is named for Fred Lawrence Whipple, who oversaw the move to Cambridge.

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In addition to observing the sky, Langley's heirs have made their presence felt in the instruments they've designed for both ground-based observatories and satellites. There's plenty more on the drawing boards: the conversion of the MMT, now the equivalent of a 176-inch instrument, to a single mirror with an aperture of 256 inches, larger than the Hale Telescope on Mount Palomar; robot scopes; x-ray cameras; interferometers; tether systems to tow instrument packages through the top of the atmosphere from the shuttle. . . The list goes on.

One of the most ambitious plans on the Smithsonian astronomers' list is for an array of six movable, six-meter radio telescopes that would have the effective strength of a single, much larger instrument. The array would observe the sky at submillimeter wavelengths. Virtually unexplored until now, this part of the spectrum is particularly useful for studying interstellar gas clouds, in which new stars and planets are believed to be forming.

One possible site for the new telescope is Mount Graham in southeastern Arizona, where the University of Arizona is already developing a major observatory. But there is opposition from environmental groups, in part because of the existence there of an endangered subspecies of the red squirrel (*Phenomena*, June 1988). Other sites are under consideration, notably Mauna Kea in Hawaii, and a decision will be made sometime in the year ahead.

Complementary to the ground-based effort is a Smithsonian-led consortium to place a small, submillimeter-wavelength telescope in Earth orbit by the mid-1990s.

Entry into the submillimeter wavelengths will give the CfA the ability to explore every part of the electromagnetic spectrum. Already its programs in theoretical astrophysics, optical and infrared astronomy, planetary sciences, atomic and molecular physics, high-energy astrophysics, radio astronomy, geoastronomy, and solar and stellar physics touch on almost every field of modern astrophysics.

"We have a broad sweep of coverage, from the longest radio waves to the shortest gamma waves, and every time we've looked at the Universe in a new wavelength band, we've discovered something new," says Shapiro, adding that he's simply continuing the tradition established by the SAO's first director.

Langley was a pioneer in exploring a region of the Sun's spectrum known as the infrared. The workaholic bachelor was a bona fide Renaissance man: a self-taught artist, aeronautical engineer, architect, naturalist, historian, linguist and astronomer (he picked up that science during a stint at the Harvard College Observatory). For his solar infrared work, he had to

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By 1909, original "temporary" building (third from left) had new additions. Langley always hoped for a better locale.

invent his own instruments. In the days before grants, Langley—as did most scientists of his era—also had to underwrite his research, which he had done earlier at the Allegheny Observatory, for example, by inventing and marketing a highly profitable timekeeping system for railroads.

His principal invention was the bolometer, a device that detects heat emitted from any warm object as infrared radiation. The instrument was so sensitive that it could detect the heat given off by a cow a quarter of a mile away. Later versions could sense infrared radiation from a source 3,000 miles away.

In turning the bolometer on the Sun, Langley had no idea of what he might find. In 1881 near the summit of Mount Whitney in California, the researcher made extensive measurements, and he suspected that he'd mapped all of the infrared spectrum known at the time. But he didn't quit. "In the still air of this lofty region the sunbeams passed unimpeded by the mists of the lower earth, and the curve of heat, which had fallen to nothing, began to rise again. There was something there. For . . . [I] found, suddenly and unexpectedly, a new [part of the infrared] spectrum of great extent, wholly unknown to science and whose presence was revealed by the new instrument, the bolometer," Langley later wrote.

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In both scientific and popular articles, he held out hope that his arcane discovery held the key to predicting Earth's weather, and when Langley started the SAO, linking Sun and Earth was his major research priority. However, he almost never got the chance to look deeper into that tantalizing possibility.

Although the inventor designed both the air-conditioning and a vibration-damping system for the original observatory, the Mall location was hardly ideal. So Langley urged a reluctant Congress to provide more suitable headquarters, preferably at the National Zoological Park that the Smithsonian hoped to establish at nearby Rock Creek. He wasn't even asking for a lot of money—$10,000, a paltry sum in light of the fact that Yerkes Observatory, dedicated in 1897, cost $368,000.

The researcher proposed to investigate the Sun in a fundamentally new way. Langley wanted to determine the underlying physical nature of our

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Young C. G. Abbot, a deft instrument designer, later was observatory director.

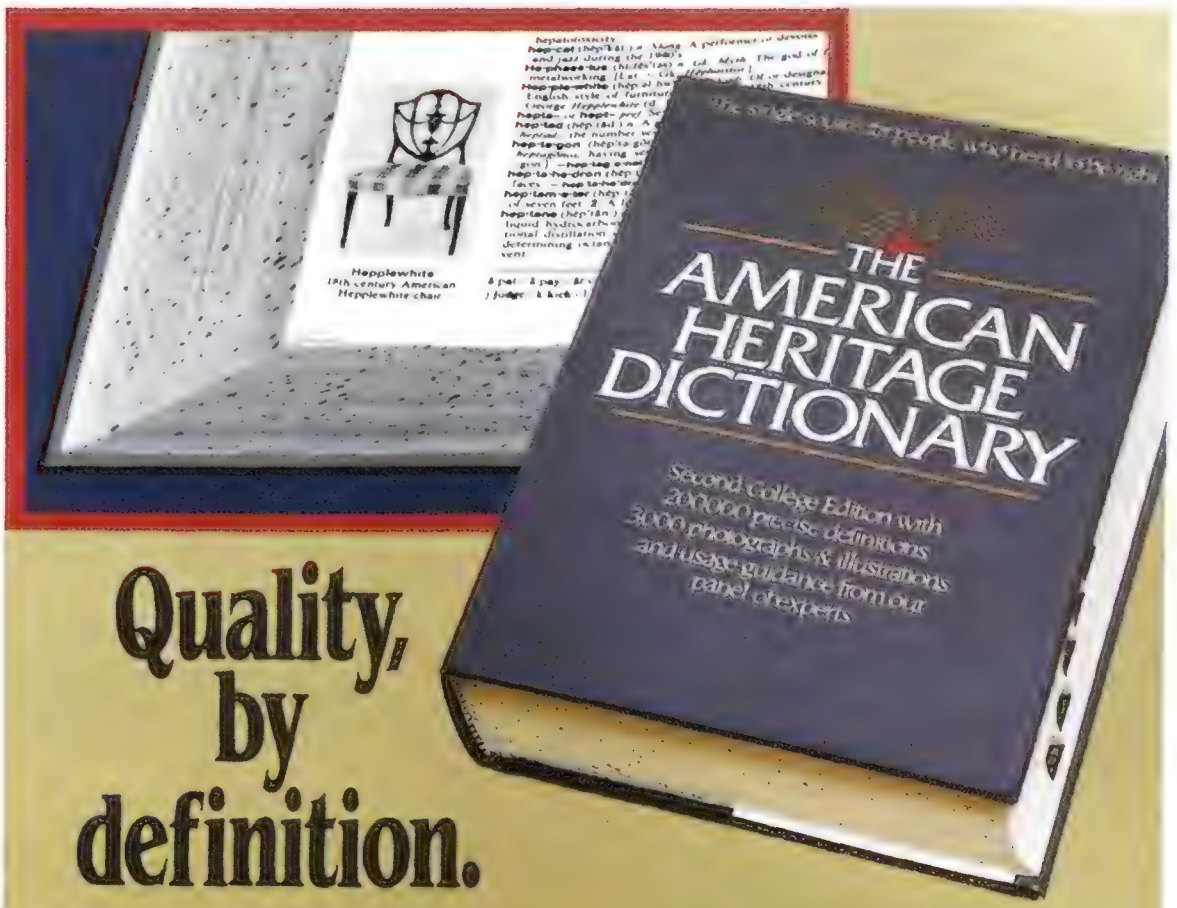
star: "What it is, how it affects terrestrial clime, and how it may best be studied for the purposes of the meteorologist and for other purposes of immediately practical nature."

While many researchers hailed this proponent of the "New Astronomy," Representative Benjamin A. Enloe of Tennessee balked at giving any money to "mere theorists or scientists." The purpose of the endeavor, beyond providing cushy jobs and "very expensive instruments" to "a number of scientific gentlemen," entirely escaped him, although the legislator was willing to hazard a guess that they might be studying the "relations of the sun and other heavenly bodies to human life, so that in the development of this science the gentleman from Maine may be able to determine whether there is some disturbance in the sun which has put the Speaker out of order in the morning and caused him to forget the rules and law, or whether solar disturbances or astral influences have . . . produced an electric storm in the House."

Langley never got his new buildings, but over the years, the organization he spawned had the last laugh on the Congressman bent on killing the SAO in its infancy. For his work with the solar spectrum set the observatory on a research course that continues to the present day. "Like Langley, our long-term goal is to understand what the Sun is doing, but instead of waiting for it to reveal itself, we've taken the initiative. We're trying to squeeze this information out of those stars similar to the Sun," says astronomer Sallie L. Baliunas.

The work of monitoring the cyclic brightening and darkening that some stars undergo regularly because of magnetic activity on their surfaces takes Baliunas to the Mount Wilson Observatory outside Los Angeles.

In 1905 Langley's assistant and successor, Charles Greeley Abbot, journeyed to this then-isolated spot and began a collaboration with George Ellery Hale, who started the observa-



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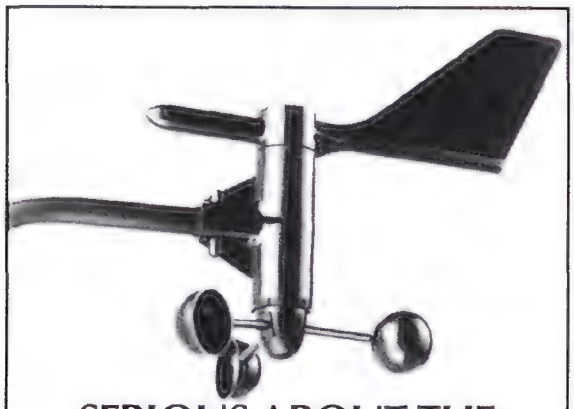

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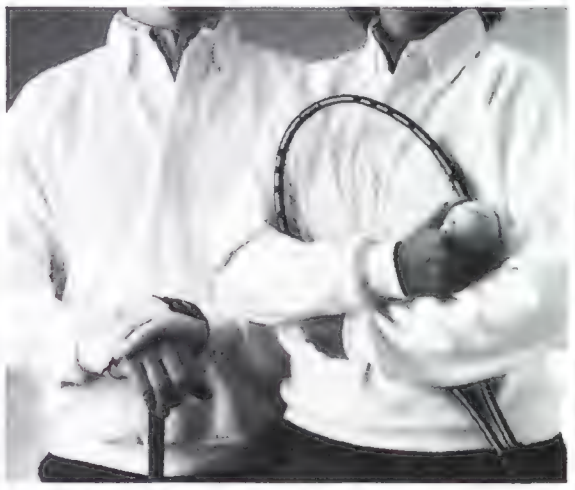

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tory at the behest of the Carnegie Institution and unsuccessfully attempted to lure Abbot away from the SAO.

"Abbot worked at Mount Wilson measuring how much energy the Sun delivers to the Earth," Baliunas explains. "He tried to see if the amount changed, and if he could correlate the changes with the Earth's weather."

This country boy from New Hampshire had been working on his master's thesis at the Massachusetts Institute of Technology, and in June of 1895 he was summoned to a fateful meeting with Langley. Despite the distinguished scientist's fame, Abbot had never heard of him, and the two men barely said anything at their get-together. Still, Langley offered him a job as his assistant in Washington at a salary of $1,200.

To fulfill Langley's dream of making astronomy practical, Abbot set out to determine the "solar constant," the total amount of energy that is received from the Sun each minute by a square surface roughly the size of a fingernail, suspended in space above Earth's atmosphere. In the pre-satel-

Abbot visits one of the field stations where the solar constant was measured.

lite days, this was not an easy measurement to obtain, but Abbot pursued it with a vengeance.

The quest sent the SAO's second director and his colleagues up mountains and into deserts around the world in search of clear air and good viewing. From the data sent back, Abbot soon convinced himself that the solar constant varied, and establishing the range of that variation became the SAO's preoccupation. For the next 50 years, the SAO was synonymous with study of the Sun.

Field stations like this were set up on mountainous sites all over the world; researchers endured spartan conditions.

To nail down the proper numbers, Abbot sent instruments aloft in balloons, and he established research stations in some of the most exotic and godforsaken locations on the planet. For varying amounts of time from 1909 until the mid-1950s, the SAO maintained solar-constant monitoring posts on the craggy heights of Mount Whitney; at the edge of the nearly lifeless Atacama desert in Chile; at lonely Harquahala Mountain in Arizona; on the sear highlands of Mount Brukkaros in southwest Africa; on Mount St. Katherine in Egypt; on Burro Mountain in New Mexico; and on Table Mountain in California.

In selecting field station staff, Abbot required only "common sense, some ability to compute, first class moral backbone" and a sense of humor, as well as the will to live compatibly with others so that they would

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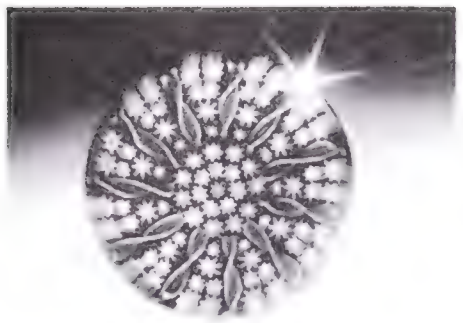
not be "sticks in the family." But the positions must have been difficult to fill, because at one point Abbot asked that civil service examinations for applicants be waived.

For those who were posted, life was extremely difficult. Many sites were treeless; water had to be brought up the mountains by burro; mail was slow—up to two and a half months; communication with the outside relied on Morse code or short-wave radio; food was limited, with fish and meats being extreme rarities; electricity was supplied by batteries or crude wind chargers. To ease their boredom, observers and their families were outfitted with the simplest of recreational pleasures. There were checkers and horseshoes, and the 175-volume field station library, containing such favorites as Descartes' *Discourses*, Plato's *Dialogues* and Dante's *Inferno*.

Through sheer grit and dedication, the observers came up with the figures that established what seemed to be the true variations in the solar constant. Abbot, who became the Smithsonian's fifth Secretary in 1928, staked his career and the SAO on demonstrating how these fluctuations affected the weather.

A lay preacher and a pit-bullish defender of his scientific faith, Abbot could debate with the best of them, whether the infidels were Congressmen hostile to his funding proposals or researchers less than convinced that his Sun-weather correlations were correct. He could appeal as The Authority, as he did at a meeting of the American Meteorological Society in 1925. "I . . . will stake my 30 years of experimental reputation that Professor Marvin [the then chief of the U.S. Weather Bureau] is totally wrong in this charge, and I submit that he ought not to have made it, knowing nothing about what we really do," Abbot asserted.

And if this tack failed, there was always the tug at the heartstrings. "Thus airily does he dismiss the re-



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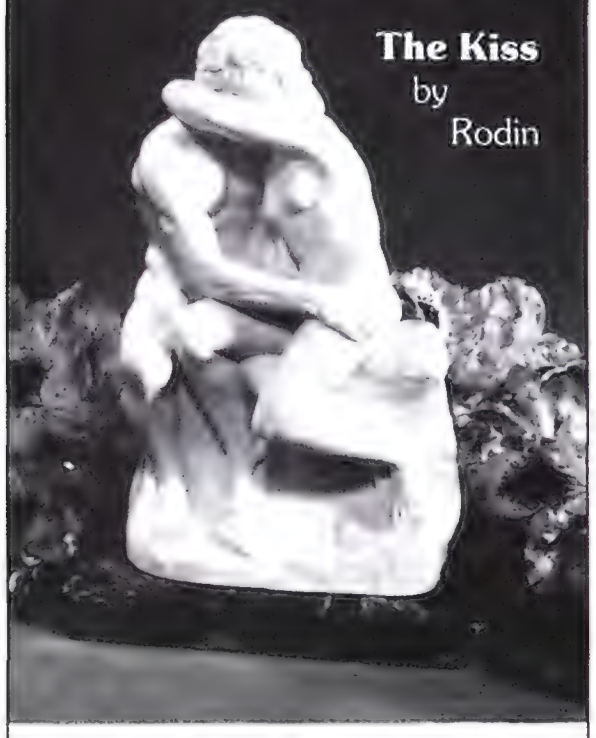

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sults of 20 years of sacrificial observing and prolonged study thereon!" he answered another critic.

In the end, Abbot always got his way. The funding appeared. The critics withdrew (or just plain gave up). The single-minded quest continued.

The pursuit almost destroyed the observatory, notes Fred Whipple, who oversaw the move from Washington to Cambridge in 1955. "They hadn't changed the research program since 1906, which was the year I was born! And it turned out that what they were measuring was not changes in the Sun, but variations in the transparency of the atmosphere. [Scientists have since determined that the solar "constant" does in fact vary, but far less than Abbot thought.] In sum, it was a futile enterprise, and the legacy of the place I inherited was zero."

Well, not quite.

The SAO had a rich history of scientific exploration, and if the place had become moribund in middle age (most of the field stations had closed, for example), Whipple had the tonic required for rejuvenation: a new research direction.

The world was poised on the brink of the satellite era. Whipple, under the banner of the International Geophysical Year scheduled for 1957-58 and armed with a $3.5 million grant, set up a global network of satellite-tracking stations. "The initial goal was to improve international geodesy [exact measurements of the shape of Earth]," he recalls. "In the early '50s, if you wanted to locate a point here on this desk in Cambridge [in relation to] one in Westminster Abbey in England, you'd be off by about 100 meters. I said that by using satellites as markers in space, tracking them and photographing them, we could reduce it to 10 meters." (With a newer radio technique, pioneered by the current director, this error has now been reduced to under one centimeter, a thousandfold further improvement.)

At a former station, an archaeologist recovers a broken recording instrument.

To accomplish this job, Whipple commissioned optics expert James G. Baker and engineer Joseph Nunn to design and build, in the exceedingly fast time of a year and a half, a sophisticated tracking camera that would be the centerpiece of a dozen observa-

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tion stations. Bucking tradition, some were located in downright pleasurable regions: Curaçao, Florida and Spain.

In addition to the tracking sites, Whipple enlisted the help of hundreds of amateur astronomy buffs around the world, observers who would spot the satellites and provide rough pointing directions for the cameras. Many researchers considered "Operation Moonwatch," as the effort was called, a gamble, but as Whipple says, "You have to be a gambler if you're going to get anywhere. Besides, there's an enormous amount of competence among people who are not professional scientists. I knew amateurs would love to help out, and they made a real contribution. The project was a huge success. It was exciting to get the public involved in the beginning of the space race."

And given the original mandate of James Smithson—his half-million-dollar bequest started the Smithsonian in 1846 for the "increase and diffusion of knowledge"—bringing in the public was entirely appropriate.

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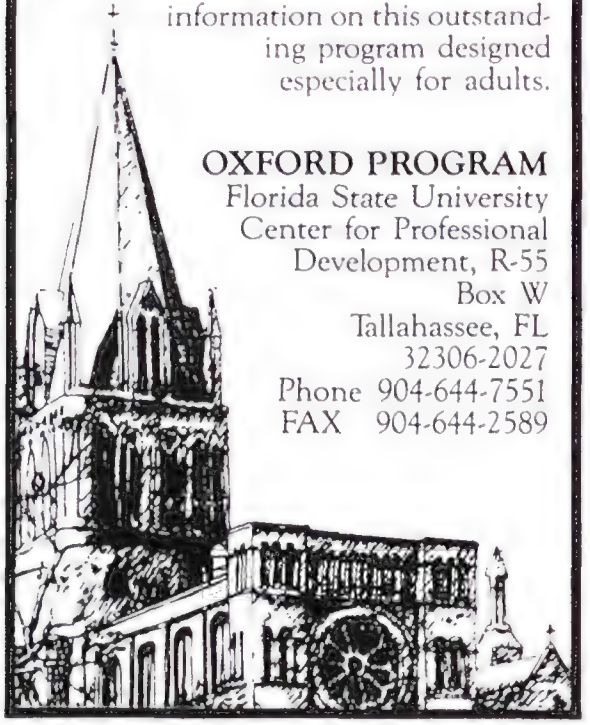

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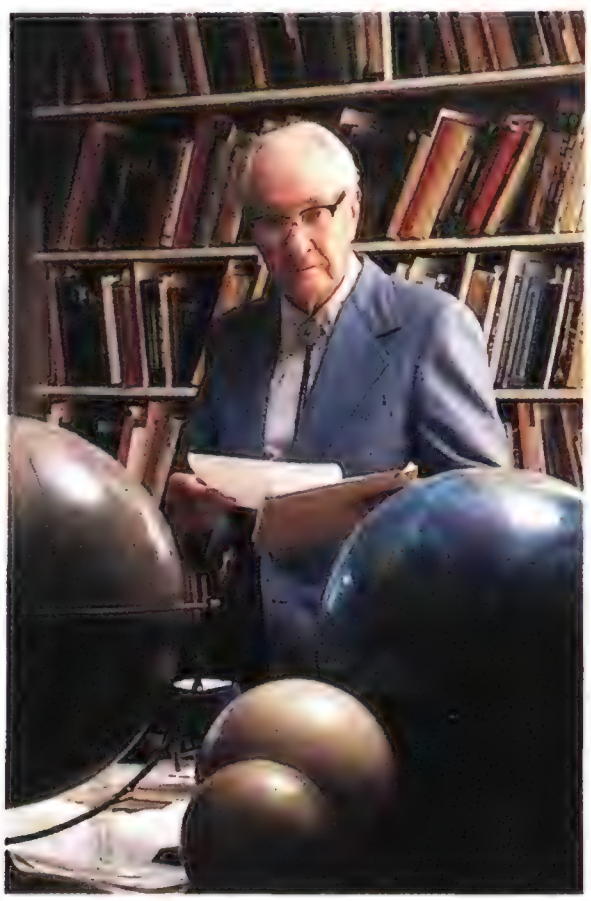
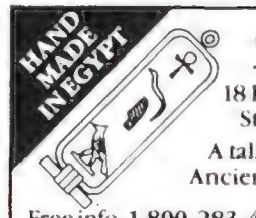


F. L. Whipple directed 1955 move to Cambridge and Operation Moonwatch.



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nally ended in the early 1980s, but CfA researchers were hardly at a loss for work. Developments that continued under George Field, Whipple's successor and founding director of the CfA, led to new tools, both ground-based and in space, which observatory scientists would use to answer truly fundamental questions about the cosmos—everything from its creation and evolution, to its constitution and structure, even its odor.

Patrick Thaddeus is an energetic CfA radio astronomer as likely to talk about Molière and Mediterranean history as he is about his specialty: the chemical makeup of the giant molecular gas clouds that swirl through space. In Cambridge, bouncing between star charts, the blackboard and his desk, he explains that the clouds are intergalactic compost heaps, giving birth to stars as well as to what he calls "a wonderful bestiary of molecules. We've now found the whole beginnings of a chemical stockroom and laboratory in space."

And in this cosmic crucible form substance after substance, some of them explosive, some poisonous and some aromatic. "It turns out that the Universe can be wonderfully odorous or malodorous, with a smell like flowers, fruits or skunks," says the cloud mapper.

With twin four-foot-diameter radio telescopes—one on the roof of the CfA complex in Cambridge, the other in Chile—Thaddeus and his colleagues scan the sky to listen for the characteristic tracer "note" sung by one kind of molecule, carbon monoxide. Radio astronomers use its song to map the length and breadth of the clouds, which can extend for hundreds of trillions of miles in space.

The "music of the spheres" is measured in wavelengths that can be yards long or shorter than minute fractions of a human hair. Thaddeus was interested in an area of the spectrum with relatively short, millimeter-long wavelengths. In the mid-1960s, few scientists encouraged this pursuit. "We

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CfA radio astronomer Patrick Thaddeus squats beneath telescope he designed.

were told, Why build a telescope for no sources? So radio astronomers went into this region of the spectrum more or less on faith. We disregarded the naysayers and the doubters and said, Let's take a look," he explains.

Langley would surely have commiserated—and smiled, because Thaddeus, using a small but powerful radio-telescope of his own design, found plenty out there. His research team has mapped the clouds that lace our galaxy, the Milky Way, and they're constantly finding new molecules in space, many of them in combination with carbon, the central element of life as we know it.

"The most stunning thing is that there's no science fiction chemistry," he declares. "When nature wants to construct big things, it relies upon the magical properties of the carbon bond, even under the vastly different conditions of the interstellar clouds. There's a very rich organic chemistry of some kind out there, and it proceeds along pathways we're just now discovering."

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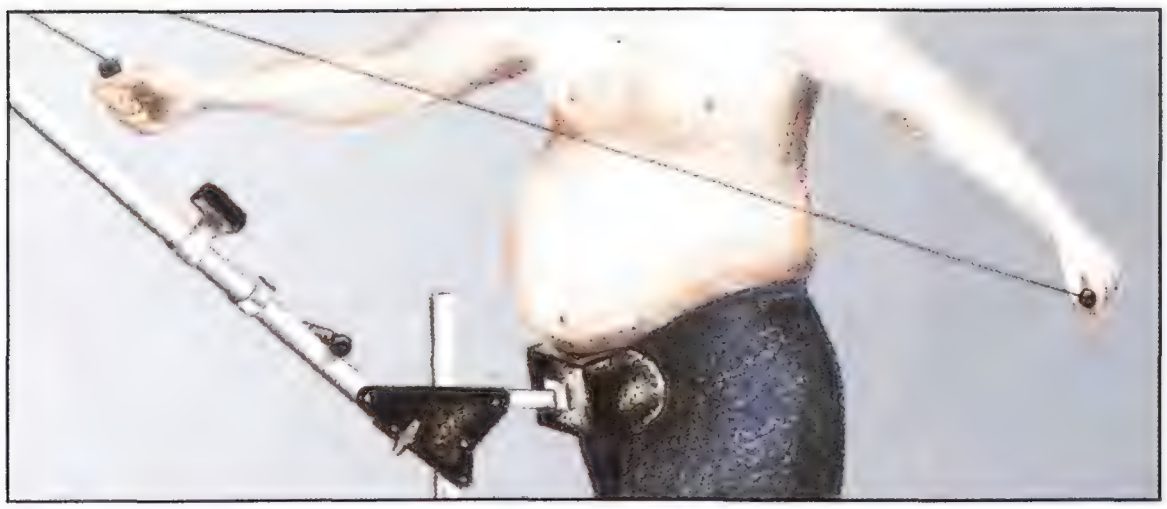

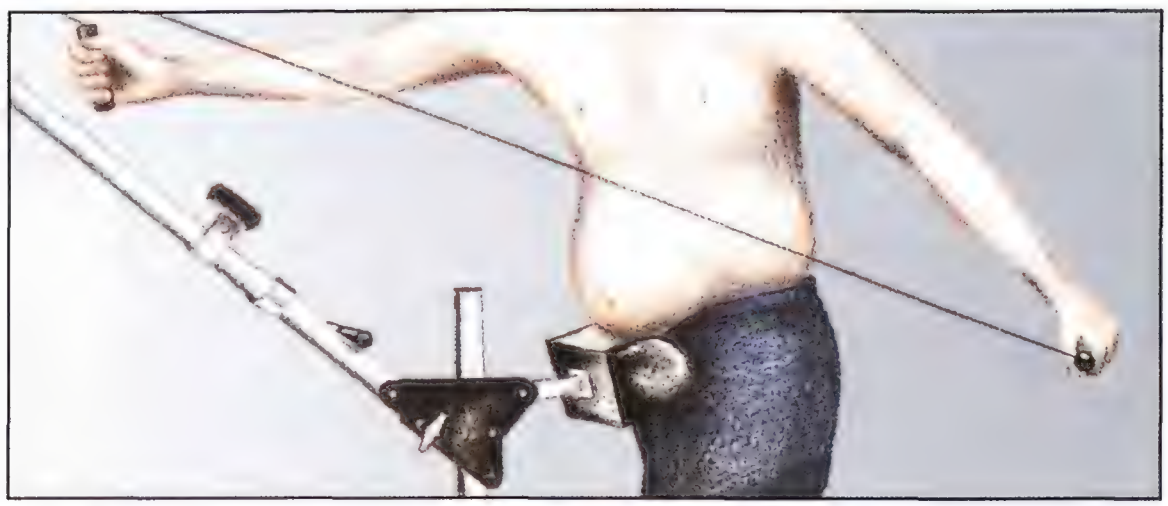

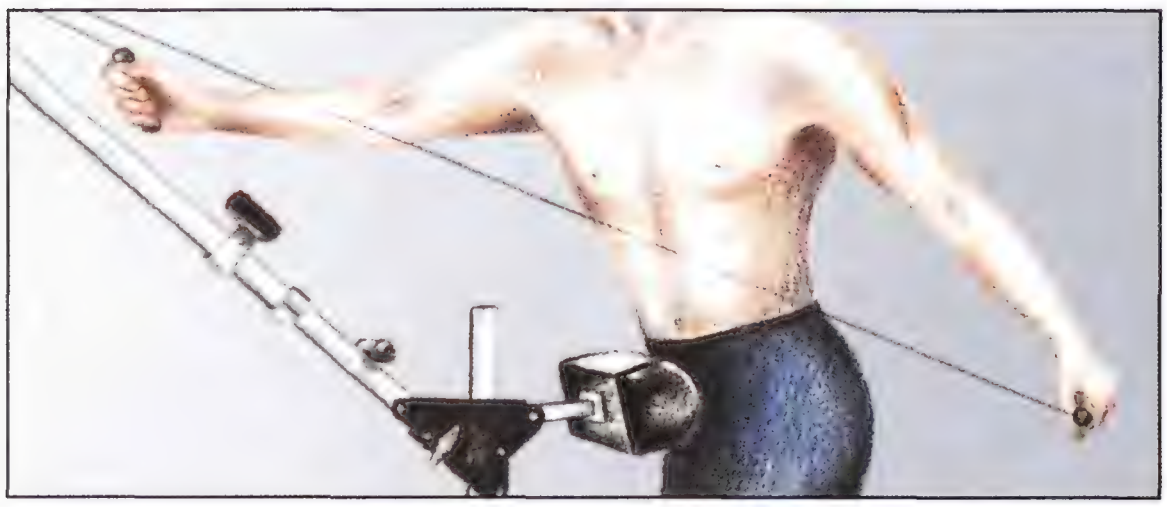

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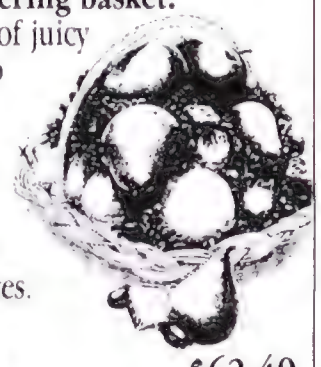

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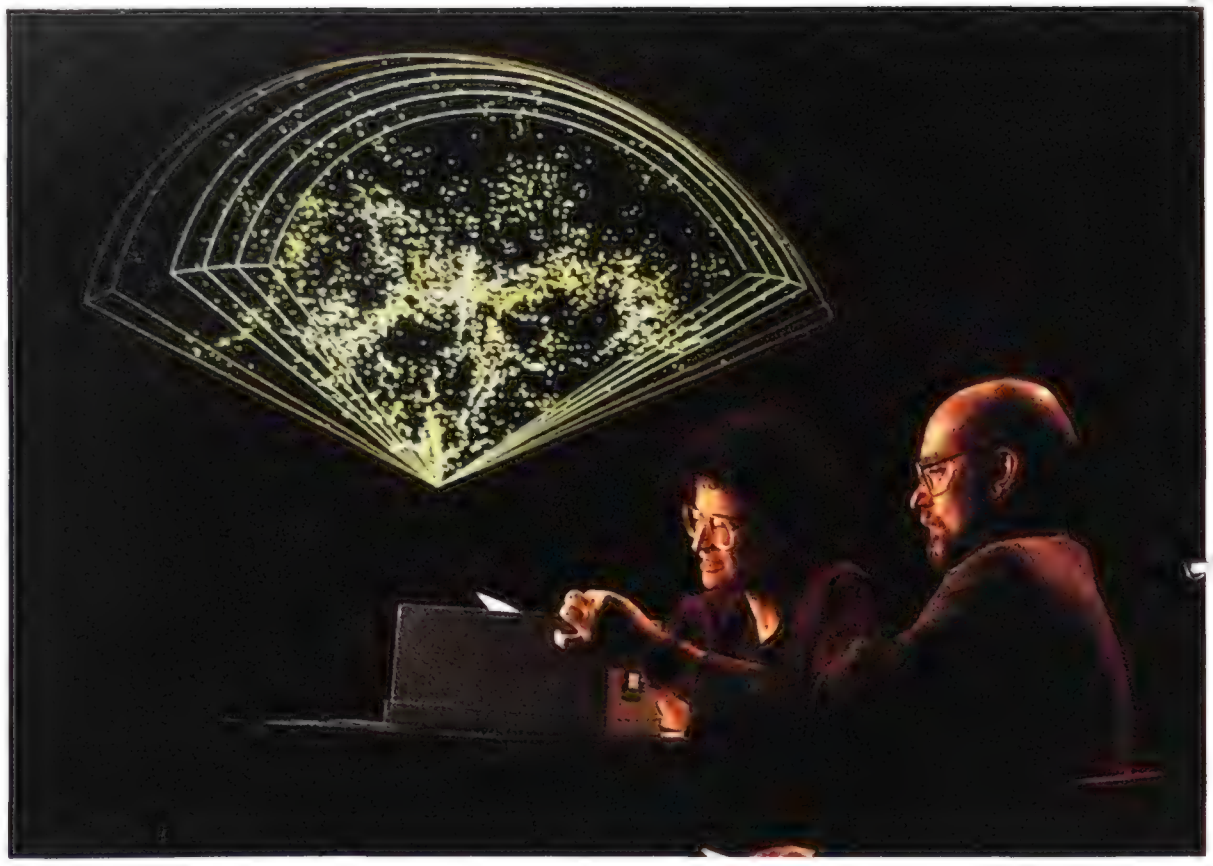

Seated below their map-in-progress of the galaxies in the Universe are researchers Margaret Geller and John Huchra.

bution of galaxies throughout the Universe was thought to be fairly uniform (SMITHSONIAN, January 1989). But then CfA astronomers Margaret Geller and John Huchra ran into a wall. A Great Wall. The wall is really a thin sheet of galaxies that stretches half a billion light-years (a light-year is approximately six trillion miles) by a quarter of a billion light-years, but is only 30 million light-years thick.

A pattern in the distribution of galaxies began to emerge in 1985. Since early in the decade, Geller and Huchra had been working on the "CfA Redshift Survey," an ambitious project to measure displacements in the spectra of galaxies that reveal the speed at which they're heading away from us. The degree of what's called "redshifting" can then be used to figure out approximate intergalactic distances.

The surveyors take spectrograms of galaxies with the 60-inch telescope at the Whipple Observatory on Mount Hopkins, and it's tricky, demanding work. "You can do 20 to 30 galaxies on a good night, but it depends on who's at the telescope," says Huchra, who has made the survey go quicker because of his telescope-jockeying talents. "My record is 50—I'm the best there is."

The "top gun" in the redshift department passed on his skill to graduate student Valerie de Lapparent, who measured some of the redshifts in a wedge of the sky that contains more than a thousand galaxies. As part of her doctoral thesis, she used data gathered by herself, Huchra, and Whipple observers Jim Peters and Ed Horine to construct a map. It was a shocker. When Huchra saw it, he figured there was something wrong with the data. "I didn't expect to see any pattern," he recalls.

Geller, with a characteristic flare for the dramatic (she originally wanted to be an actress), had a different reaction to the map. "I said, 'My God, we've found something amazing!' "

The data proved correct, and Geller's initial assessment was right. "This is the largest design there is so far," says Geller, an alternately shy and fiery astrophysicist whose father, an x-ray crystallographer, instilled in her a curiosity about the geometric structure of nature.

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The amazing discovery was a striking pattern of galaxies distributed around edges of vast cosmic voids. It was as if the large-scale structure of the Universe resembled the soap bubbles in a kitchen sink. Since that discovery, Huchra and Geller have mapped additional wedges. They have now bagged nearly 12,000 redshifts, and the largest structure of all, dubbed the Great Wall, became apparent in the data collected last year. How it evolved remains a subject of hot debate.

"The Redshift Survey is part of the history of mapmaking," explains Geller. "People have always wondered about their environment, and every map ever made is a description of the Universe at the time the map was made, or the environment that the society sees, or how it sees a place. This is the first age in which we can map the Universe and rewrite the last lines of our cosmic address."

But will the upcoming generations of Americans care?

This country's growing scientific illiteracy has researchers worried that all too soon, future investigations may have to be shelved for want of talented people. To help reverse the trend, the CfA launched three teacher-education programs, two in astronomy and one in the earth sciences. The effort that focuses on high school students is called Project STAR, an acronymn for Science Teaching through its Astronomical Roots.

As Darrel Hoff, STAR's associate director explains, the aim of all three programs is to create a curriculum and teaching aids, as well as train teachers from kindergarten through high school in the fine art of hands-on science. "There's got to be a 'messing around' stage," he says, "or the fun of science is lost."

"Hands-on science requires that teachers become learners right alongside their students," explains R. Bruce Ward, a high school science teacher in Belmont, Massachusetts, who has been through the program. "Get teachers turned on to their own learning, and they'll turn on the kids."

One hundred years after its lowly beginnings in a tin-roofed shed, the SAO in its new, joint incarnation is at the very center of today's excitement in astronomy. Some of those turned-on kids may well turn up at the Cambridge complex as it pushes into its second century. John Quincy Adams' idea is burning brighter than he could have dreamed.

On Mount Whitney, old solar observing station is bathed in a golden glow as its former subject sets in the West.

Book reviews

The Lives and Times of Ebenezer Scrooge
Paul Davis
Yale University Press, $29.95

For some people, Scrooge is forever Lionel Barrymore (on the radio) or Alastair Sim or—for some poor souls—Albert Finney in the lamentable Leslie Bricusse musical. My Scrooge is Reginald Owen (p. 144) and has been since my 13th Christmas. The surprise having gone out of the gifts, the turkey having been consumed, my brother and I persuaded our mother that we needed to go downtown to the Vaudette (the second-best movie house in Connersville, Indiana) where *A Christmas Carol* was playing. I can still see, just beyond my typewriter, Reginald Owen's wonderfully mobile face framed in the window as his Scrooge, newly purged by the ghostly visits, shouts to the street below, "Boy! What day is it?"

My memory would be no surprise to Paul Davis, the author of *The Lives and Times of Ebenezer Scrooge*, for he calls the window scene the "moment of purest joy" in the Dickens story. He would, however, have to insist that I was remembering idiosyncratically, because in Davis' description of my movie *Carol*, which like all readings of the Dickens original reflects its own time and place, Scrooge was forced to share equal screen space with his nephew Fred and with Bob Cratchit. One of the difficulties with critical readings of any moment in art is that they are likely to run up against the recollections of anyone who was there. That does not mean that the critic is inaccurate or uninteresting; so, despite my keeping Owen center screen in my memory, *Lives and Times* has fascinations of its own as social and literary history.

A Christmas Carol was not only an immediate and a continuing joy to readers, but it has always been appealing to writers and performers and artists who wanted to improve it, explain it, cash in on it. Dickens' story was published December 19, 1843, and by January 6 *Peter Parley's Illuminated Library* had published *A Christmas Ghost Story*, a presumed improvement "re-originated" from Dickens; by February, there were productions by eight different theatrical companies. The flood has not stopped. Davis has immersed himself in 150 years of Dickens spin-offs—illustrated editions, theatrical versions (plays, operas, films, animated cartoons), parodies, casual allusions, even scholarly reconsiderations of the work. He differentiates between the *Carol* and the unitalicized Carol, the "culture-text" that is constantly reworked from one period to

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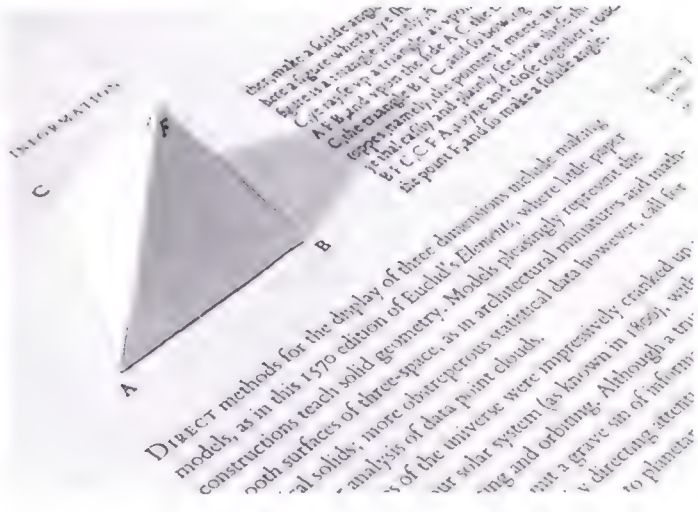

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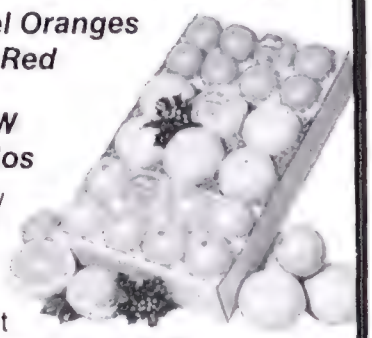

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Reginald Owen (right), a happy Scrooge, offers to contribute to fund for poor.

another and which has given us some images (Scrooge's visit to the Cratchit home, for instance) that many people incorrectly think were in Dickens' story. In *Lives and Times*, Davis sinks his shaft into the mother lode of the Carol and comes up with five samples—the richer ones presumably—which he examines as indications of how the Carol changed across the years.

He begins with *A Christmas Carol* itself. A "now" book, as publicity types might call it today, Dickens' story turned its back on the traditional English country Christmas and moved the holiday into an urban setting, where celebration filled the streets and shops, and where there was occasion enough for the sociopolitical criticisms he intended—Want and Ignorance hidden beneath the rich robe of Christmas Present.

By the end of the century, partly through Dickens' own changes in his story to suit the audiences of his public readings, the emphasis shifted from Scrooge, who became a "figure of religious instruction," to the Cratchits, whose homelife became the center of the tale. The ghostly presences diminished in the face of the secular holy family, and the Carol—if not the *Carol*—became a sacred work that illustrated, as Mrs. Oliphant acidly remarked, the "immense spiritual power of the Christmas turkey."

At the turn of the century, the Carol changed from tract to children's story in which the personal, not the social, is emphasized. Tiny Tim, as befits a fairy tale, tames the ogre Scrooge, and the whole is suffused with "rose-colored nostalgia" for a Dickens Christmas that never was.

Between the wars, when *New York Times* columnist Arthur Krock "sug-

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gested that *A Christmas Carol* contained the philosophic kernel of President Roosevelt's New Deal," Scrooge tended to be a misguided businessman who had to learn, as Jacob Marley said in the original, "Mankind was my business. The common welfare was my business. . . ." The lesson did not call down opprobrium on business itself but made Scrooge, as newly enlightened businessman, see that his clerk was properly paid and take in his nephew (and in some versions Cratchit) as partner. The line between social classes disappeared, at least in America, and Scrooge could carry the turkey to the Cratchits himself.

After World War II "Scrooge changed from economic type to psychological case," and by 1970, having worked through his childhood hang-ups, as Davis shows in a chapter called "The Greening of Scrooge," spread material joy with ludicrous abandon—as the vulgar abundance of the musical *Scrooge* shows.

The most recent evocation of Ebenezer is the "supply-side Scrooge . . . the Scrooge for our time." The old gentleman was right after all, as Edwin Meese indicated in 1983 when he said, "So let's be fair to Scrooge. He had his faults, but he wasn't unfair to anyone." Dickens notwithstanding, Cratchit's pittance was presumably the going wage for clerks in 1843. So much for "The common welfare was my business."

My brief descriptions of the changing Carol are hardly fair to *Lives and Times* because Davis considers a great many works, some of them in detail, to make his points. This diversity gives the book its substance, but it creates a few problems. For one thing, his need to pull back frequently to a developing argument saddles his study with a great deal of repetition. For another, he sometimes overreaches in choosing his Carols. For instance, he considers Frank Capra's *It's a Wonderful Life* to be the "quintessential American Carol," while I suspect that a Carol in which Scrooge (the villainous banker, Potter) simply disappears and Cratchit (George Bailey) undergoes the ghostly—in this case, angelic—reformation is no Carol at all. Elsewhere—again as though any Christmas story were a version of the Carol—he discusses James Whitcomb Riley's "The Boss Girl" in a way that misses what Riley was up to in his portrait of a tough-tender newsboy.

It may be a virtue of the book that one wants to quarrel with individual read-

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ings, but differences between reader and author need not deny Davis' central idea—that the culture-text of a popular work takes on a life of its own, using or ignoring or emasculating the original. Davis' words aside, *Lives and Times* also makes its argument through the illustrations, cartoons and photographs that the volume richly supplies.

Anyone who needs assurance that the Carol is "unending," as Davis says, should check Philadelphia at Christmastime. Something called *Appalachian Ebenezer* should be on the boards then. As for me, if my courage holds, I plan to hunt up Reginald Owen on video and risk losing the magic of my own Christmas memory.

Gerald Weales
Emeritus Professor of English
University of Pennsylvania

Once There Was a Farm . . .
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Marcel Proust made a seven-story tower from them; Thomas Wolfe, a mountain. More recently, in *Growing Up*, Russell Baker made from the memories of his early years an annotated album of candid family snapshots, funny and sad.

Memoirs of youth, whether fictionalized or strictly factual, assume many shapes and sizes. Some are monumental, and reading them is like making an arduous climb, with many pauses to catch one's breath; others, like *Growing Up*—and now, *Once There Was A Farm*—can be held in one's hands and intimately treasured like an old locket.

Between Baker's and Virginia Bell Dabney's factual memoirs there are striking similarities: both have rural and small-town-Virginia locales in the years between the world wars; both center on resourceful, independent mothers whose husbands are either dead or of no great consequence. Unlike Baker, Dabney finds few occasions for laughter in her childhood on a farm in central Virginia. But—remarkably for a writer making her literary debut at age 71—she hits all the other major notes of youthful emotion, from her grief at the death of her oldest sister, to her delight in the attention of Susan, the vivid black woman who helped Virginia's mother in the house.

In 1917, Alice Bell moved to the farm from Chicago, with her father and her two daughters. Until he retired, her

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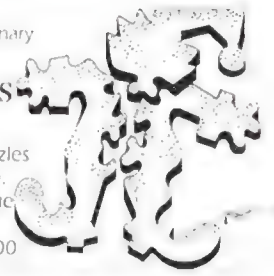

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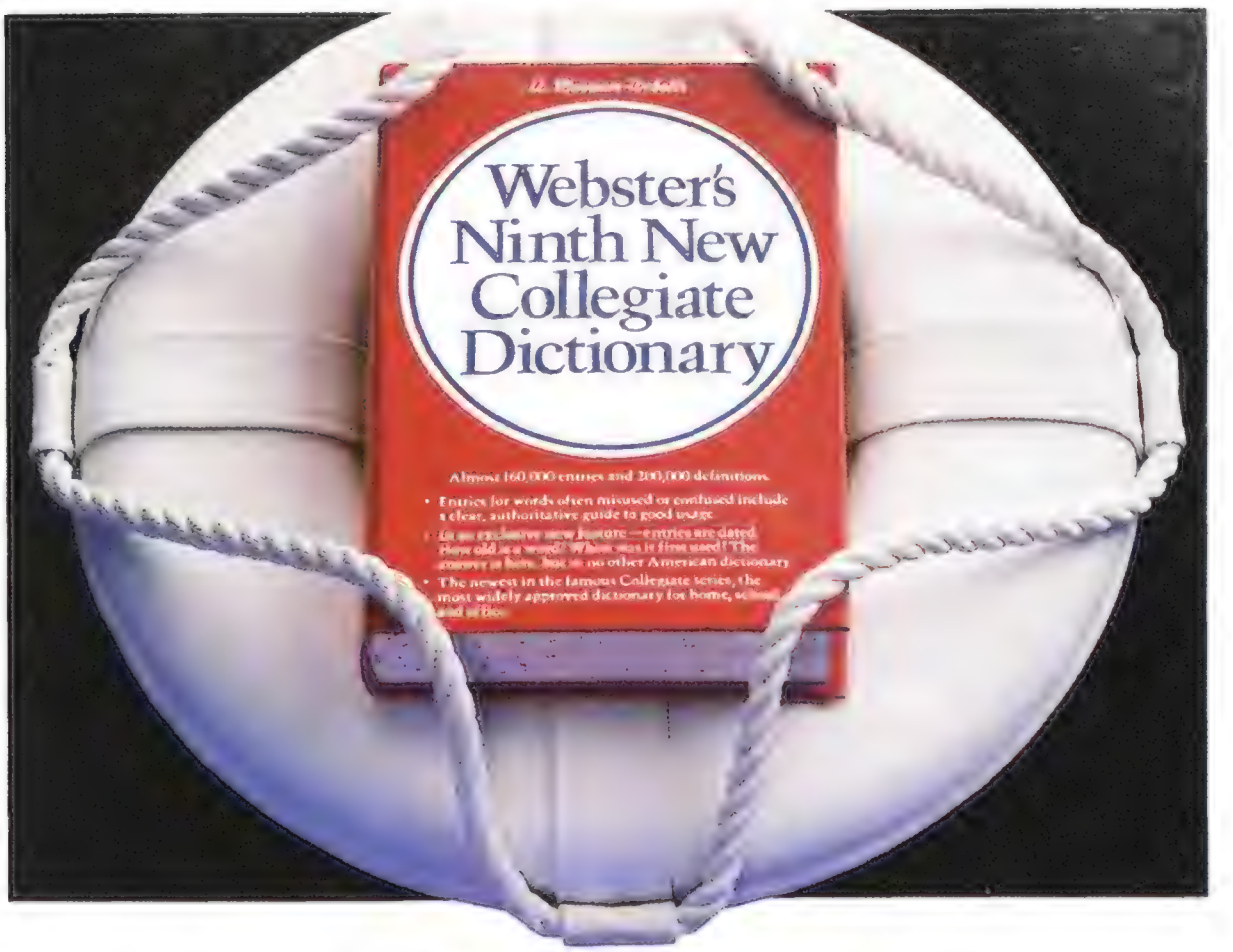
husband, a misanthropic insurance adjuster, spent only vacations and holidays at the farm, where the youngest child, Virginia, was born in 1919. It was a curious arrangement. When he came, Dabney writes, "He was treated by mother and by us as the guest he was: She cooked the special dishes that he liked and dressed prettily in the mornings. . . . There was a slight feeling of relief, never voiced, at seeing him go. The next morning my mother sat at coffee in her old, comfortable bathrobe."

For Alice Bell, such moments of repose were rare. Though she received financial support from her husband, the burdens of day-to-day parenthood and farm management fell on her. Alice Bell was a quick study in the ways of chickens, pigs, horses and cows. Hired hands and her daughters helped with the daily chores: starting a fire in the cook stove, milking cows, skimming milk, gathering eggs and feeding the livestock. Even during the worst of the Depression, Alice Bell stayed out of debt and covered her taxes.

In a spare voice stripped of sentimentality, Dabney's stories pay tribute to her mother's high-mindedness and grit. A forest fire accidentally set by a drunken employee at a lumber company destroyed the Bell house and sheds along with those of two neighboring black families. Alice Bell resolved to rebuild. When Jeb Hensley, the owner

Virginia Dabney at 71: "It has taken me almost a lifetime to be ready to write."



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of the lumber company, refused to make up for the losses, she hired an attorney, Harrison Floyd, and insisted that Hensley compensate her and her black neighbors. Trying to intimidate her into dropping the suit, Hensley paid Alice Bell an unexpected evening visit.

"No jury in this county is gonna make me pay you and those niggers for a fire I didn't set and had nothing to do with," he warned her. "Her voice was chilly," the author remembers. "I will wait and see what the jury will do," Alice Bell said. "And if you have anything more you want to say about this, Mr. Hensley, say it to Mr. Floyd."

As she did in most of her battles, Alice Bell prevailed: Hensley agreed to her terms out of court. But what engages one most about the book is the continuing tension between a mother's desire to shelter her baby girl from ugliness and pain, and Virginia's encounters with the world as it was. The book contains two major portraits: not only that of a stalwart mother, but also that of a girl who witnessed blatant racism and sexism, the apparently arctic marriage of her parents, her sister's premature death, and Depression-era despair.

To supplement her income, Alice Bell took a part-time job with the county farm-loan association, a branch of the Federal Land Bank. Eager to be with her, Virginia often accompanied her mother as she visited clients. The daughter shared her mother's pain in seeing once-proud farmers now self-pitying, drunken, hapless. Once Virginia watched as her mother reluctantly foreclosed on a farm belonging to close friends. "I thought you were my friend," the woman bitterly told Alice Bell, slamming the porch door in her face.

One minor quibble: the several later chapters devoted to the present or the recent past break the spell of a child coming to consciousness, and these chapters suffer by comparison. It is a measure of how vividly Dabney evokes the distant past that one wants to vault over descriptions of her present house in Virginia's Allegheny Mountains and the like and become immersed once more in a lost world.

With that exception, *Once There Was a Farm* is a seamless memoir, honest, dramatic, eloquently austere. Written in its own good time, it echoes with the plaintive notes of mortality.

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Additional reading

Global warming (p. 28)

Global Warming: Are We Entering the Greenhouse Century? by Stephen H. Schneider, Sierra Club Books, San Francisco, 1989

"The Changing Climate" by Stephen H. Schneider, *Scientific American*, September 1989

"Where's the Heat?" by Warren M. Washington, *Natural History*, March 1990

Ruby the elephant (p. 40)

"Elephants: The Continuing Search for Better Ways to Care for Our Animals" by Dick George, *Arizoo*, Phoenix Zoo, November-December 1989

Elephant Memories by Cynthia Moss, William Morrow, 1988

"The Asian Elephant as a Subject in Psychophysical Studies" by C. Bennett, *Eighth Annual Elephant Management Workshop Proceedings*, North Carolina Zoological Park, 1987

Elephants of Africa by Paul Bosman and Anthony Hall-Martin, C. Struik (Capetown), 1986

Among the Elephants by Iain Douglas-Hamilton, Viking, 1975

Typewriters (p. 54)

The Wonderful Writing Machine by Bruce Bliven jr., Random House, 1954

Century of the Typewriter by Wilfred A. Beeching, Heinemann (London), 1974

The Remarkable Writing Machine by Carol H. Behrman, Julian Messner (New York), 1981

"The Difficult Birth of the Typewriter" by Cynthia Monaco, *American Heritage of Invention and Technology*, Spring-Summer 1988

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David Clark–*Audio* Magazine 9/89

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Collector's Guide to Antique Typewriters, edited by Dan R. Post, Post-Era Books (Arcadia, California), 1981

The Writing Machine: A History of the Typewriter by Michael H. Adler, George Allen & Unwin Ltd. (London), 1973

Childe Hassam (p. 68)

Childe Hassam: An Island Garden Revisited (exhibition catalog) by David Park Curry, Denver Art Museum in association with W. W. Norton, 1990

An Island Garden by Celia Thaxter, with pictures and illuminations by Childe Hassam, Houghton Mifflin Company, 1988 (facsimile of 1894 edition)

Childe Hassam by Adeline Adams, American Academy of Arts and Letters (New York), 1938

Childe Hassam by Donelson F. Hoopes, Watson-Guptill Publications (New York), 1979

Sandpiper: The Life and Letters of Celia Thaxter by Rosamond Thaxter, Peter E. Randall (Hampton, New Hampshire), 1963

Poet on Demand: The Life, Letters and Works of Celia Thaxter by Jane E. Vallier, Down East Books (Camden, Maine), 1982

Tony Hillerman (p. 92)

"Navajo Cops on the Case" by Alex Ward, *New York Times Magazine*, May 14, 1989

"A Canyon, an Egret . . . and a Mystery" by Tony Hillerman, *Audubon*, July 1989

"The Mysteries of Tony Hillerman" by Judith Tabor Gaugenmaier, *American West*, December 1989

The Dorotheum (p. 110)

"In Vienna, at the Dorotheum" by Nino Lo Bello, *Washington Post*, May 15, 1988

"Auctions" by Rita Reif, *New York Times*, June 28, 1985

"Artravel '90: Europe" by Dwight V. Gast, *Art & Auction*, July-August 1990

SAO (p. 125)

Two Astronomical Anniversaries: HCO & SAO, edited by Owen Gingerich, Harvard-Smithsonian Center for Astrophysics (Cambridge, Massachusetts), 1990

Lighthouse of the Skies by Bessie Zaban Jones, Smithsonian Institution, 1965

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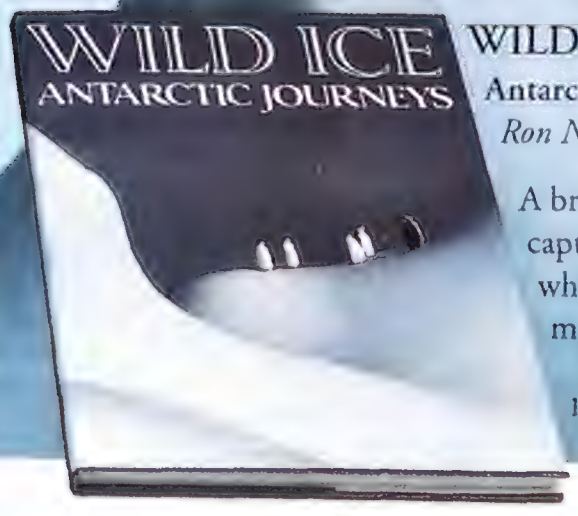

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Freer remains closed

The Freer Gallery of Art is closed until late 1992.

Holiday events

The annual holiday celebration will take place December 26-31 from noon to 4 P.M. daily at the National Museum of American History. The festivities will feature music, storytelling, crafts and food, and will observe traditions of Christmas, Hanukkah, Kwanzaa and the New Year. For information, call 357-2700.

The Smithsonian at Peabody Concert Series

The Smithsonian's Division of Musical History and the Peabody Conservatory of Music announce a special series of concerts by the Smithsonian's period-instrument ensembles. Smithsonian musicians also will offer a series of master classes at Peabody.

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Special December exhibits and events

National Museum of Natural History
North American Wild Flowers (through January 6) An exhibit honoring painter and naturalist Mary Vaux Walcott. See *Highlights continued*, page 156.
Sharks: Fact and Fantasy (through January 20) Comprehensive look at sharks and their behavior.
Healing a River: Fifty Years in the Life of the Potomac (through January 25) A show celebrating the 50th anniversary of the Interstate Commission on the Potomac River Basin.

National Air and Space Museum
Blue Planet (runs indefinitely) New Smithsonian Imax film features spectacular footage of Earth and its environment as seen from space. See *Around the Mall and beyond*, November 1990.
"Trust but Verify"/"Do Veri, No Pro Veri" New permanent exhibition features a U.S. Pershing II missile and a Soviet SS-20 missile and explains the Intermediate-range Nuclear Forces (INF) Treaty between the two countries.
A Piece of Mars? (runs indefinitely) The fragment of meteorite discovered in Antarctica and thought to be from Mars.

National Museum of American History
American Papermaking, 300 Years (December 19 through November 1991) Exhibit will commemorate three centuries of papermaking by examining the many aspects of the trade.
This Is Your Childhood, Charlie Brown: Children and American Culture, 1945-1968 (through April) A look at post-World War II children, as depicted in the *Peanuts* comic strip.

National Portrait Gallery
Camera Portraits: Photographs from the National Portrait Gallery, London, 1839-1989 (December 14 through February 18, 1991) Originated by London's National Portrait Gallery in 1989, this exhibit presents portraits of individuals significant to British history and culture.
Old Hickory: A Life Sketch of Andrew Jackson (through January 13) The seventh President's accomplishments and era, through paintings, memorabilia.

Hirshhorn Museum & Sculpture Garden
Comparisons: An Exercise in Looking (December 11 to April 21, 1991) Works from the museum's collection present a visual exercise in which visitors can explore the question of how one work of art may be judged against another. See *Around the Mall and beyond*, page 16.
John Baldessari (through January 6) The first major retrospective of the influential Los Angeles artist's work.
DIRECTIONS: Boyd Webb (through January 27) Photographs by the London-based artist.

National Museum of American Art
Childe Hassam: An Island Garden Revisited (through January 6) Images of the Isles of Shoals, off the Maine-New Hampshire coast, and poet Celia Thaxter's enchanting garden. See page 68.
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National Museum of African Art
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Arthur M. Sackler Gallery
The Arts of China (runs indefinitely) More than 200 objects, including sculptures and paintings, span 6,000 years.
Chinese Lacquered Furniture (through April 30) Pieces from the 15th through the 18th centuries.
Antoin Sevruguin: Photographs of Iran (through May 26) An intriguing documentation of everyday life.

Renwick Gallery
Four Contemporary Calligraphers (through January 1) English, Chinese, Arabic and Hebrew manuscripts.

Anacostia Museum
Gathered Visions: Selected Works by African-American Women Artists (through April 28) Paintings, drawings, fabric art, sculptures and prints by 15 Washington, D.C. area artists.

International Gallery, S. Dillon Ripley Center
Moscow: Treasures and Traditions (through February 3) A major exhibition of icons, paintings, porcelains, costumes and metalwork, seen for the first time outside the Soviet Union.

Cooper-Hewitt Museum (New York)
Eighteenth-Century Scenic and Architectural Design: Drawings by the Galli Bibiena Family (through December 30) Works by the creators of Baroque theaters and stage sets.
Gold of Greece: Jewelry and Ornaments from the Benaki Museum (through January 13) More than 200 objects from the renowned Athens museum.
Mondo Materialis (through February 24) Collages made of high-tech materials.

Exhibition catalogs

Camera Portraits: Photographs from the National Portrait Gallery, London, 1839-1989 (paper, $35; cloth, $60)
Childe Hassam: An Island Garden Revisited (paper, $25; cloth, $45)

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(signed) Carey O. Randall

Associate Publisher, Administration

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Smithsonian on the air

Radio Smithsonian: The weekly half-hour series includes features on information technology and our society, Smithsonian's celebration of the 500th anniversary of Columbus' encounter with the New World, and highlights from the first 21 years of *Radio Smithsonian*.

Here at the Smithsonian: Three-minute TV spots take you behind the scenes.

To find out which stations in your area carry these programs, write: Office of Telecommunications, MAH Room BB40, Washington, D.C. 20560.

Radio Specials: Two specials are being aired during December. A two-hour program, hosted by Bill Cosby, will present highlights of the Louis Armstrong Jazz Trumpet Competition held at the Smithsonian. A three-hour special will present Bach's Christmas Oratorio performed on original instruments by the Smithsonian Chamber Orchestra and Chorus. Check local listings.

Smithsonian National Associates

The program will host a lecture series on tropical rain forests, art history and photographic preservation in Stockton, California, January 31-February 3.

For further information write or call: U.S. and International Events Program, 490 L'Enfant Plaza, S.W., Suite 4210, Washington, D.C. 20560;(202) 287-3210.

Resident Associate Program

To become a Resident Associate, or for fee and ticket information, call 357-3030. Here are some December events:

Matisse and Picasso: A Friendship in Art (December 3; 7 P.M.) Artist and author Françoise Gilot, Picasso's companion from 1946 to 1954, discusses the affection, rivalry and dynamic interaction between Henri Matisse and Pablo Picasso.

An Evening with Yevgeny Yevtushenko (December 11; 8 P.M.) During this captivating evening, poet Yevtushenko, now a member of the Soviet Parliament, will discuss his art and read from his work.

Blue Planet (December 17; 7:30 P.M.) New Imax film at NASM.

Joy to the World! Christmas in Britain (December 10; 6 P.M.) Slide-illustrated lecture by writer Virginia W. Newmyer.

Smithsonian Institution Traveling Exhibition Service

SITES organizes and circulates exhibitions to cities throughout the United States and abroad. To sponsor a show in your community, write SITES, Smithsonian, Washington, D.C. 20560. Here are some December exhibits:

Flint, Michigan (December 29-January 27, 1991) *Field to Factory: Afro-American Migration, 1915-1940*, Flint Public Library.

Savannah, Georgia (December 15-February 3, 1991) *Haiti: The First Black Republic and Its Monuments to Freedom*, King-Tisdall Cottage Foundation.

South Hadley, Massachusetts (December 29-February 24, 1991) *From Site to Sight: Anthropology, Photography and the Power of Imagery*, Mount Holyoke College Art Museum.

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From the wild, botanical beauties

Eight-year-old Mary Vaux treasured the box of watercolors she received as a gift in 1868. On rambles around the family estate in Bryn Mawr, Pennsylvania, she began observing the natural world and painting landscapes.

Family holidays took her into the Canadian Rockies each year. Alongside her father and brothers, who conducted pioneering studies of glacier movement in those mountains, she found her life's passion: botanical illustration. An ardent mountain climber, she trekked over rugged passes and meadows to document the transient beauties of wildflowers. Over a lifetime, her ravishing paintings—she recorded more than 700 species—established her as the "Audubon of North American wildflowers."

For the first time since 1939, a selection of her work can once again be viewed in all its splendor. "North American Wild Flowers: Watercolors by Mary Vaux Walcott," at the National Museum of Natural History, showcases 50 flower portraits from the collection of 700 watercolors held by another Smithsonian museum, the National Museum of American Art.

Her career made for a life of high adventure. Vaux Walcott painted all her flowers from life, eschewing pencil sketches and enduring hardships of every description to capture her subjects. She worked in the company of mountain creatures—a black bear gorging on whortleberries, a family of marmots foraging for seeds. She celebrated her 77th birthday with a 20-mile horseback ride in the Rockies.

While working in the field, she met Charles Doolittle Walcott, the noted geologist and paleontologist who was the fourth Secretary of the Smithsonian Institution. They were married in 1914. With his encouragement, the Smithsonian published her five-volume *North American Wild Flowers* in 1925.

The exhibition continues through January 6, 1991.

Kathleen M. Burke

Western red lily is noted for brilliant color but withers quickly when picked.

Found in bogs, swamps, bottle gentian is a perennial that blooms into fall.

American wisteria, a shrubby climber, boasts an abundance of showy flowers.

Blossoms of American water lily open in early morning; aroma draws insects.

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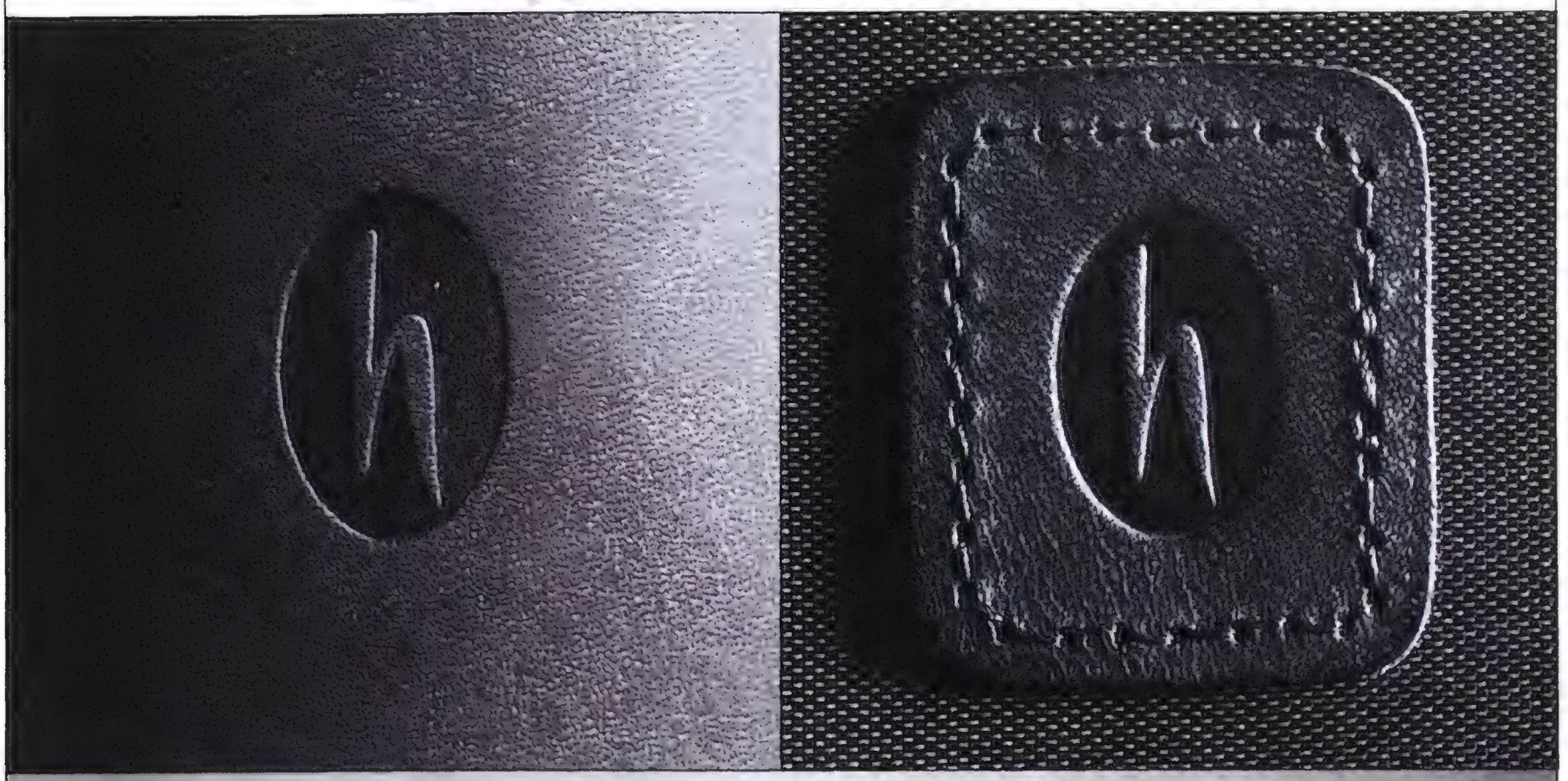

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Domestic Study Tours

Smithsonian "Anytime" Weekend
Explore Washington, D.C.'s museums; enjoy a "Castle" tour.

Yellowstone in Winter *February 16-23 or February 24-March 3* History, ecology and cross-country skiing.

NEW New York Theater *March 1-3* Visit production houses; see Broadway plays.

Charleston-Savannah *March 19-26*

Sapelo Island *March 28-April 1* Explore this Georgia barrier island.

New Orleans-Natchez *April 7-14*

Historic Homes of North Carolina *April 9-15* New Bern, Edenton, Outer Banks.

NEW Sojourn in Sedona *April 18-23* Explore Arizona's Red Rock country.

Big Bend (Texas) *April 18-27*

Arizona in Spring *April 24-May 2* From the Sonoran Desert to the Chiricahua Mountains.

Grand Canyon Weekend *April 25-28, May 2-5 or September 26-29*

Okefenokee *April 29-May 4* Canoe in a wildlife refuge.

Detroit Auto Barons *May 2-5*

NEW Jefferson's Virginia *May 3-9* Visit Richmond, Charlottesville, Monticello.

Southwest Indians *May 15-25 or August 22-September 1*

NEW Hawaii Camping *May 18-June 1*

Alaska Cruise *June 4-17*

Foreign Study Tours

Christmas in Europe York and Edinburgh, Canterbury or Switzerland.

Interludes *January-April* Uncrowded museums, cultural events and leisurely exploration in Munich, Prague, Paris, Lisbon, Vienna, Hong Kong or Kyoto.

South America Adventure *January 3-23* Cruise around Cape Horn on the *Seabourn Pride.*

India Wildlife *January 13-February 7*

Yucatán Adventure *January 16-28*

USSR Performing Arts *January 18-31* Includes the Bolshoi and Kirov theaters.

Kenya-Tanzania *January 24-February 10*

Antarctica, South Georgia and the Falkland Islands *February 1-23* Aboard the icebreaker *Polar Circle.*

Far East Adventure *February 6-26* Singapore, Malaysia and Thailand.

Guatemala *February 13-25* Explore monumental Mayan ruins.

Belize Cruise *February 19-March 5* Cozumel to Panama.

Indonesia Cruise *February 20-March 7*

NEW Bermuda *February 21-25* Study the island's cultural history.

Countryside Tours *February-September* Relaxing sojourns in Mexico, Greece, Italy, France, England, Switzerland, Austria, Wales and Germany.

NEW Reindeer Safari (Finland) *February 24-March 5*

NEW St. Kitts *February 28-March 9* Culture and natural history in the Caribbean.

Australia-New Zealand *March 1-21*

NEW Belize Adventure *March 2-9*

NEW Treasures of Mogul India *March 5-25*

NEW Alpine Snow Train (Switzerland) *March 7-19*

Sea of Cortés *March 13-20* Cruise Mexico's Gulf of California.

Budapest Music Festival *March 13-24*

Morocco *April 13-27*

NEW Dutch-Belgian Cruise *April 13-28*

USSR and Central Asia *April 14-27*

Costa Rica *April 18-May 3*

British Theater *April 19-29*

NEW Islands of the Western Mediterranean Cruise *April 19-May 1* Aboard the *Renaissance.*

Nile Cruise *April 19-May 5*

Galápagos Islands *April 20-May 1* On the *Isabela II.*

Gardens of Northern Italy *April 23-May 4*

Berlin, Prague and Budapest *May 1-12*

Brazil-Argentina *May 1-15*

Splendors of Italy Cruise *May 5-22* Aboard the *Argonaut.*

NEW Mozart and His World *May 8-19* Austria and Czechoslovakia.

USSR Natural History *May 17-31*

Treasures of Spain *May 17-June 2*

NEW Garden Tours *May-June* Private and public gardens and estates in England, France and Italy.

Japan Cruise *May 19-June 3*

Poland *June 7-20*

NEW Journey of Ulysses *September 6-22* Cruise from Istanbul to Malta, Pozzuoli and Ithaca aboard the *Illiria.*

Smithsonian Seminars

Explore diverse topics in depth with top scholars during classroom study and tours. Courses are held in Washington, D.C. unless otherwise indicated.

Venetian Art *January 22-25* See Titian and Van Dyck exhibitions.

Florence *February 28-March 15* Study great monuments, history.

Write to Smithsonian National Associate Program, Washington, DC 20560 or call (202) 357-4700 for tour and seminar brochures.

SMITHSONIAN-STYLE

NEW Mythology and Visual Images *March 4-8*

NEW Broadcast Journalism *March 10-15* Daniel Schorr, Judy Woodruff and others discuss television news past and present.

NEW Information Age *March 25-28* Explore the effects of computers on society.

Animal Behavior *April 2-5* Study at the National Zoo.

NEW Carrier Warfare in the Pacific *April 8-12*

Twentieth Century Furniture *April 15-19*

NEW Inside Smithsonian *May 6-9* Led by writers, editors and production staff.

The New Astronomies *May 12-17 or 19-24* Tucson, Arizona

Southwestern Archaeology *June 2-6* Santa Fe, New Mexico.

NEW Air Force History *June 12-15* Wright-Patterson Air Force Base, Ohio.

NEW American Impressionists in Connecticut *June 12-23 or September 11-15* Hartford, Cos Cob and Old Lyme.

Research Expeditions

Contribute your talent and financial resources to Smithsonian research. Work with curators in Washington, D.C. or at field sites worldwide.

Cancún, Mexico *February 8-22* Study birdlife and vegetation.

Jamaica *February 22-March 4* Document the Hindu festival Pagwah.

Costa Rica *April 6-18 or July 6-18* Monitor geologic activity and collect plant specimens at an active volcano site.

NEW Calvert Cliffs, Maryland *May 2-11* Collect fossils along the Chesapeake Bay.

Washington, D.C. *May 21-31* Inventory sculpture in the nation's capital.

Front Royal, Virginia *July 6-14* Study wildlife and vegetation in the Shenandoah Valley.

NEW Jamaica *July 16-28* Record the East Indian festival Hosay.

(202) 287-3210 for expedition brochures.

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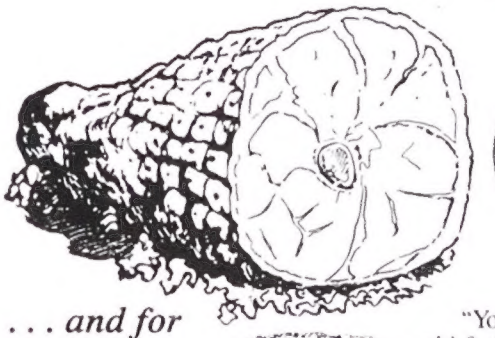

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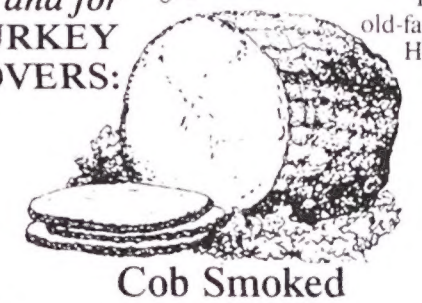

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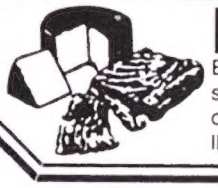

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By Bruce Watson

This computer menu serves up soup to nuts

As Thomas Paine observed, "These are the times that try men's soups." Or maybe it was "This is the thyme that fries men's sole"?

It's no use. Every sentence I type is invaded by some sort of salmagundi. I type the most pedestrian of phrases, and parsley comes out. I craft a perfectly bland paragraph on the state of the economy and presto! jalapeño peppers my prose. I can write the leanest, cuisinest paragraphs in the writer's market, but things are getting out of halvah. If I can just strain the vegetables from my syntax, I'll tell the salad story.

It started last month when my word processor went belly-up. It's a fairly scampi device, a few megabytes of memory, a keyboard, microchips, quick onion dip, and a disk drive. For a year my words had been chopped, aligned, blocked, justified and spread on paper like so much pâté. Then in the midst of my pivotal work on Eastern Europe, the machine choked on the word *glasnost* and went blank.

Because of the high cost of high-tech repair, I decided to tackle the job myself. With a copy of *Integrated Circuitboard Repair Made Simple*, I popped off the back of the terminal and dove into the stew. I was testing the chips when the phone rang. My wife was bringing her boss home for dinner. Could I have a lasagna and a Caesar salad ready by 7?

Within minutes my legendary lasagna was in the oven, and our food processor was churning out an industrial-strength salad. But as greens flew, I suddenly smelled smoke. I unplugged the device and removed the back. After tinkering with the motor I took the food processor to the table where the pieces of the word processor were strewn, and the rest is horseradish.

That night, my wife's boss, a tall, slim woman with a look of pure pesto, was sampling the salad. She began probing her molars, digging as if it would be fatal to swallow whatever had lodged upstairs. My wife and I watched in hors d'oeuvres as the woman pulled and pulled and finally yanked a spreadsheet from her teeth.

I felt like an anise. "Now, how did that get in there?" I asked. Scallions of apologies and a bitter silence followed. Then my wife found a pronoun in her bowl, and I pulled a format command and a piece of floppy disk, drenched in vinaigrette, out of mine.

The next day I noticed something fennel about both machines. Not only did the food processor mix metaphors with its cuisine, but the word processor tossed salad into my carefully crafted sentences. I spent the afternoon trying to romaine the situation, but obviously with little succotash.

Without making too much compost, I managed to discern some patterns. When I press the F8 key, the terminal asks, "Would you like to sauté? Y/N?" If I press Y, my sentences are fried with onion and garlic. Press F6 and a fondue appears on the screen with the recipe underneath. F2 makes pretty good pasta dough, and F5 will take a pound of cabbage and a half-pound of carrots and serve enough coleslaw to satisfy the hungriest editor.

All of this effectively minced my hopes of writing my pivotal work on Eastern Europe until I discovered that software companies had antipastoed the problem. Apparently the food-word interface is becoming more and more compote in our technologically bewildered society. Because so many home repairmen have melded their machines, you can now buy software to take the vitamins out of your journalism and sort the punctuation from your jambalaya. Tomatosoft will strain your product to separate the syntax from the salad. MS-Tossed will pick the paragraphs from your salad bowl. The latest version of SaladPerfect 5.0 allows me to write the next chapter of my pivotal work on Eastern Europe, turn leftovers into a lunch, type two business letters, and make a quick-and-easy dinner for four, all with the touch of a button. With the spice checker I can scan for errors in seasoning while the mouse gobbles up any stray crumbs.

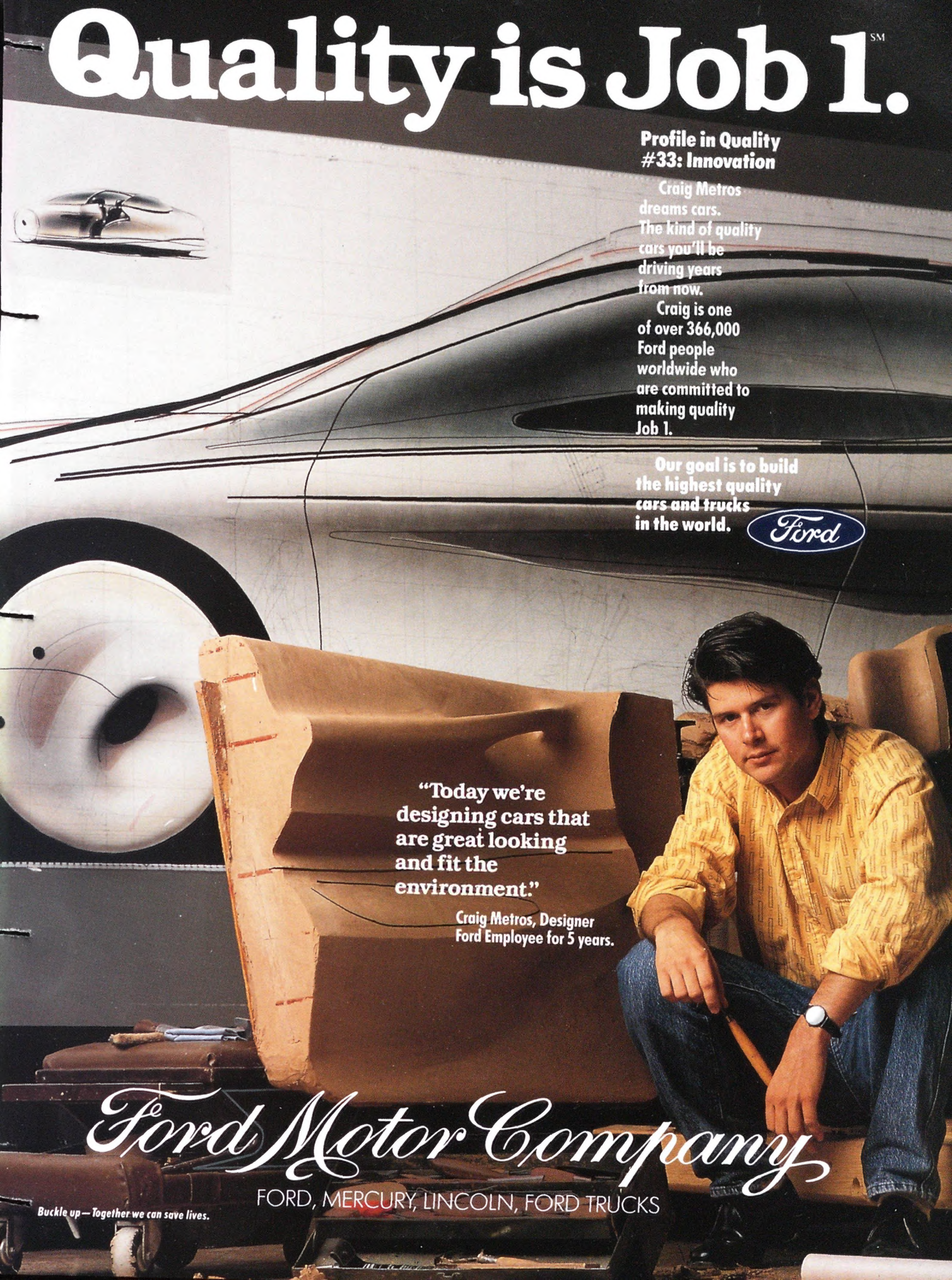
Things went smoothly for a while, but then last week . . . I was finishing up Chapter 7 of my pivotal work on Eastern Europe and making a pot of borscht at the same time. Sampling the bright-red soup, I spilled some on the keyboard. Anyone in the least bit famished with history should be able to decipher the resulting goulash: "And so Mr. Havel has a—REVOLUTION! WORKERS OF THE WATERMELON UNITE! ALL POWER TO THE PUMPKINS!—difficult task ahead of him. Mustering the forces of democracy is challenging enough—TO THE BARRICADES! YOU HAVE NOTHING TO LOSE BUT YOUR CHARD! DEATH TO THE IMPERIALIST MARGARINE!—in the best of times, but given the economic hardships of the Czecho—BOLSHEVIKI! STORM THE WINTER SQUASH! UP AGAINST THE WALL, REDNECK KIELBASA!"

It only got worse from there. I tried my Norton Utensil's software, but not even that could clean up my pivotal work on Eastern Europe. But the final straw came when I made a salad while typing a letter, then hit the wrong key and erased the entire bowl.

Fortunately I had a backup salad, but I had forgotten to back up the dressing and had to make a new batch.

This word-food processor is now for sale. Software and silverware included. If you're interested, call right away. Some enterprising author-turned-chef is sure to scarf it up any day now. Curry! I mean, hurry! Before I hash it to pieces.

Quality is Job 1.[SM]



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